AMERICA'S HOUSEKEEPING BOOK

THIS COVER IS WASHABLE

Compiled by

NEW YORK HERALD TRIBUNE HOME INSTITUTE

Digitized by the Internet Archive
in 2010

http://www.archive.org/details/americashousekee00newy

AMERICA'S HOUSEKEEPING BOOK

America's Housekeeping Book

Compiled by

NEW YORK HERALD TRIBUNE

HOME INSTITUTE

1941

Charles Scribner's Sons • New York

COPYRIGHT, 1941, BY
CHARLES SCRIBNER'S SONS

Printed in the United States of America

All rights reserved. No part of this book may be reproduced in any form without the permission of Charles Scribner's Sons

A

Introduction

BY MRS. WILLIAM BROWN MELONEY

THIS BOOK is unique. Research has shown that *America's Housekeeping Book* is the only one of its kind, the first ever published which is a complete manual for the housewife.

Divided into three parts, carefully indexed and cross-indexed, *America's Housekeeping Book* tells how to organize a home, what the most modern housekeeping methods are, and it gives a careful analysis of the operation and maintenance of the home. A quick glance through the chapter headings will confirm this statement.

New as it is, this book has really been fifteen years in the making. For more than a decade and a half housekeepers have written or telephoned to the Herald Tribune Home Institute for help with problems for which no authoritative books held the answers. Gradually the Institute has answered many questions which called for long and difficult research. In the process of finding the solutions to some questions, the Institute turned up more and more information of vital interest to the homemaker, and the files on this phase of the Institute work steadily grew.

For instance, from the frantic question of a housekeeper who wanted to know how to save a valuable rug on which some one had spilled a bottle of green ink, came the research which un-

covered the fact that the treatment varied widely for different kinds of ink and for different varieties of rugs and carpets. The greater part of a whole chapter of this book grew out of that first question about a bottle of green ink.

The entire staff of the Herald Tribune Home Institute and many of its Advisory Council (also compilers of *America's Cook Book*) have labored on this work for several years, and more than one hundred specialists in various fields have been called on for their expert technical knowledge in order to bring this information up to date. The questions of hundreds of housekeepers sent to the Institute have guided us in assembling the contents of this book, and many have contributed practical suggestions.

Miss Eloise Davison, director of the Herald Tribune Home Institute, was the outstanding specialist in home economics to develop this book and to organize the endless detail and gather the more than one thousand facts which make this book indispensable in every modern home. Miss Davison, who was the director of a department in the Division of Home Economics in Iowa State College and also was on the staff of Ohio State University in the College of Home Economics, has carried on unusual research covering household equipment and home management.

America's Housekeeping Book is the last word of experts on the easiest and most efficient way to do your housekeeping job, the best way to manage our most vital industry—the American home.

ACKNOWLEDGMENTS

THE VALUE of this book is derived from the many authorities who assisted in its preparation. Credit is here acknowledged to Demetria Taylor who did much of the final preparation of the manuscript; to Jean Joyce, Margaret Jane Suydam and Dorothy Ducas of the Home Institute Staff, each of whom was directly responsible for certain sections of the book; to Mr. William Zerbe, also of the staff, for photographs; to Mr. Carsten Grande for drawings; and to Elizabeth Stone Macdonald who assisted with some of the original planning.

We are especially grateful for the invaluable cooperation of the members of our consulting staff who read and criticized the manuscript: Doctor Lillian M. Gilbreth, Doctor Edna Noble White, Doctor Benjamin R. Andrews and Doctor Flora Rose; and also for special help on the manuscript which was given by Olive Settles, Lydia Ray Balderston, Maud Wilson, Dorothy Wells, Jessie Stanton, Joan Rock, Marjorie Workman, Doctor Amey Watson, S. Agnes Donham and J. L. Suydam.

Valuable assistance was also received from the members or from the headquarters staff of the following associations: American Gas Association; American Institute of Laundering; American Medical Association; American Red Cross; American Society of Heating and Ventilating Engineers; American Walnut Association; American Washer and Ironer Association; Association of Cotton Textile Merchants of N. Y.; Better Business Bureau of N. Y.; Better Fabrics Testing Bureau; Cleanliness Institute; Cotton Textile Institute, Inc.; Edison Electric Institute; Furniture Education Institute; Institute of Carpet Manufacturers; Mahogany Association, Inc.; Marble Industry Employers Association; Movers Warehouse Men's Association of Greater N. Y., Inc.; National Adequate Wiring Bureau; National Association of Bedding Manufacturers; National Association of Disinfectant and Insecticide Manufacturers; National Association of Dyers and Cleaners;

National Electrical Manufacturers Association; National Paint, Varnish and Lacquer Association; National Pest Control Association, Inc.; National Safety Council; New York Board of Fire Underwriters; Plumbing and Heating Industries Bureau; Rubber Manufacturers Association; Tanners' Council; Tile Manufacturers Association; Underwriters' Laboratories; Vacuum Cleaner Manufacturers Association; Wallpaper Institute; and Water Services Laboratories, Inc.

We are deeply grateful to the following companies who made material available to us: Aluminum Company of America; Aluminum Cooking Utensil Company; Aluminum Goods Manufacturing Company; Armstrong Cork Products Company; Bendix Home Appliances, Inc.; Bissell Carpet Sweeper Company; Black, Starr & Gorham, Inc.; Brooklyn Union Gas Company; E. L. Bruce Company; Cannon Mills; Certain-teed Products Corporation; Chase Brass & Copper Company; Compton Advertising, Inc.; Congoleum-Nairn, Inc.; Consolidated Edison Company; Consolidated Laundries Corporation; Copeland and Thompson, Inc.; Corning Glass Works; Donahue and Coe; Frigidaire Division, General Motors Corporation; Fuller Brush Company; General Electric Company; Gorham Company; Griswold Manufacturing Company; Hardman, Peck & Company; The Hoover Company; Household Finance Corporation; Imperial Paper and Color Corporation; International Looms, Inc.; International Nickel Company; International Silver Company; S. C. Johnson and Son, Inc.; Kenwood Mills; Lenox China Company; Lever Brothers Corporation; Lincoln Warehouse Corporation; R. H. Macy & Co.; Manhattan Storage and Warehouse Company; Manning Bowman Company; Byron G. Moon Co., Inc.; Moore Enameling and Manufacturing Company; Morgan and Brothers; J. L. Murphy, Inc.; Nashua Manufacturing Company; The Palmer Brothers Company; Pendleton Dudley & Associates; Proctor and Gamble Company; Reed and Barton; Revere Copper and Brass, Inc.; William A. Rogers Ltd.; Servel, Inc.; Simmons Bed Company; Singer Sewing Machine Company; Society for Savings; Syracuse China Company; Richard E. Thibaut, Inc.; Tile

Tex Company; United Wall Paper Factories, Inc.; Waring Corporation; Wellington Sears Company; Westinghouse Electric & Manufacturing Company.

We also appreciate the excellent help from the U. S. Department of Agriculture Bureau of Entomology; the Entomology Department of Purdue University; N. Y. State College of Home Economics, Cornell University; and the Bedding Division of the New York State Department of Labor.

Credit is due the following for photographs which they generously loaned us for use in this book: *Good Housekeeping Magazine; McCall's Magazine;* B. Altman & Company; Anthracite Industries, Inc.; Consolidated Edison Company; Crane Company; Darnell Corporation; F. M. Demarest; Easy Washing Machine Company; The Electric Fuse Manufacturers Guild; Emerson Electric and Manufacturing Company; Frigidaire Division, General Motors Corporation; General Electric Company; Hoover Company; Imperial Paper and Color Corporation; Kitchen Maid Sales Company; Kopper's Company; Lewis & Conger; Manhattan Storage and Warehouse Company; National Association of Disinfectant and Insecticide Manufacturers; Ozite Carpet Cushion Company; Pittsburgh Equitable Meter Company; Singer Sewing Machine Company; and Westinghouse Electric and Manufacturing Company.

ELOISE DAVISON
Director of the Herald Tribune Home Institute

Contents

Part I

ORGANIZATION OF THE HOME

I. WHEN YOU HUNT A HOME 3

What to look for when you rent an apartment, buy a house, buy a house to remodel.

II. BUDGETING YOUR TIME 9

Benefits of a schedule—Necessary daily activities—Necessary weekly activities—Skeleton housework schedule—Checking up on the schedule.

III. CONVENIENT KITCHENS 15

The three work centers—Floor plans of four types of kitchens—Breakfast nooks or snack bars—The butler's pantry—Storage problems—Working areas—Lighting and wiring—Ventilation—Finishes and surfaces—Garbage disposal—Paper in the kitchen—The kitchen and the family—The business center—Check chart for a convenient kitchen.

IV. PLANNED SPACE FOR LAUNDERING 38

The laundry room—The kitchen-laundry—The laundry-sewing room—The kitchen-utility room—Height of working surfaces—Lighting and ventilation—Finishes and surfaces.

V. A PLACE TO SEW 44

Large and small equipment—Storing the equipment—The sewing cabinet—A sewing unit in the living room.

VI. CHILDREN'S ROOMS 49

The baby's room—A room for small children—Furniture that grows—Well-planned closets—Storage space for toys—Bookshelves—A room for the adolescent child—Lighting.

VII. SPECIAL STORAGE PROBLEMS 62

Linen closets—Clothes closets—Bureau drawers—Sports equipment—Garage space—Rustic garden furniture—Miscellaneous problems.

VIII. MONEY MANAGEMENT 71

Saving by the reward system—The tentative budget—A suggested budget form—A "pattern" for making a budget—Installment buying—Average expenditures of American families—Borrowing money.

IX. HOME SAFETY 87

Fires: their causes, how to avoid them, and what to do if one occurs—Falls—Burns and scalds—Poisons and their antidotes—Asphyxiation—Smoke explosions—Electric shock—Cuts and wounds—Firearms—Protecting children—Handling tools—First aid—The home medicine cabinet—Miscellaneous necessities—Home nursing.

X. HOUSEHOLD EMPLOYEES 109

Present problems and solutions—Choosing an employee—A sample working agreement between employer and employee—Schedules—The training period—Training an efficient cook—Teaching her to serve, to clean, to launder, to care for children—Miscellaneous problems—Part-time help—Trained help.

Part II

HOUSEKEEPING METHODS

Section One: *CARE OF THE HOUSE*

XI. TOOLS FOR HOUSECLEANING TASKS 131

Use and care of tools—The vacuum cleaner—The carpet sweeper—Hand applicators for floor wax—Brooms—Mops—Brushes—Dusting and polishing cloths—Cellulose sponges—Rubber gloves—Storage of cleaning equipment—The cleaning basket.

XII. FLOORS 143

Floor waxes and how to use them—Finishes for wood floors: shellac, varnishes, gloss lacquers, penetrating finishes or oils, floor oil, paint—Unfinished wood floors—Linoleum and composition floors—Clay tile, slate, marble, terrazzo and cement floors.

XIII. WALLS, CEILINGS AND WOODWORK 157

Dusting walls—Painted walls: how to wash—Wallpaper: non-washable and washable—Repairing damage to wallpaper—Other types of wall coverings and materials—Ceilings—Woodwork: painted, waxed, varnished—Special problems.

XIV. WINDOWS AND WINDOW FITTINGS 169

Windows: how to clean—Shades—Venetian blinds—Wood-slat or bamboo porch shades—Valences or cornice boards—Screens—Awnings—Glass curtains and draperies.

XV. RUGS AND CARPETS 173

Precautions concerning care and cleaning—Pile rugs—Oriental rugs—Various other kinds of rugs—Stair carpeting—Scatter rugs—Fringe—Rug cushions—Removing stains from rugs and carpets.

XVI. CARE OF FURNITURE 184

Finished wood furniture: dusting, polishing, washing, rubbing, special care, removing blemishes and spots—Upholstered furniture: shampooing, removing spots and stains—Leather upholstery—Other types of furniture.

XVII. SPECIAL CLEANING PROBLEMS 196

Mirrors—Pictures—Lighting fixtures—Lamp bases—Lamp shades—Sun lamps—Telephones—Pianos—Books—Book bindings—Fireplaces—Radiators—Hot air registers.

XVIII. CARE OF METALS 208

Aluminum—Brass—Bronze—Chromium—Copper—Iron—Monel—Nickel—Pewter—Silver—Steel—Tin—Zinc.

XIX. DISHWASHING 217

By hand and by electric dishwasher—Care of glassware—Care of dishes—Care of cooking utensils—Care of cutlery—Care of woodenware—Care of dishcloths and dish towels.

Section Two: *HOUSECLEANING* 226

Daily cleaning—Weekly cleaning—Seasonal housecleaning—Living room—Dining room—Bedroom: bed frames, springs, mattresses and pillows, bedding, how to make a bed, the baby's room—Bathroom: bathtub and washbowl, toilet bowl, metal fixtures, care of drain traps, shower stalls, shower curtains, hampers—Halls and stairs—Kitchen: refrigerators, ranges, sinks, garbage cans.

Section Three: *LAUNDERING*

XX. LAUNDRY EQUIPMENT, WATER SOFTENERS AND SOAPS 255

Structural equipment, portable major equipment, small equipment—Water softeners—Soaps.

XXI. WASHING METHODS 261

Procedure for household cottons and linens—In a washer—By hand—Rinsing—Bluing—Bleaching—Starching—Basic starch—Freshening fabrics—Extracting water—Drying—Sprinkling—Care of washing machine.

XXII. IRONING PROCEDURES 272

By hand—By machine—Flatwork—Curtains—Wearing apparel—Trimmings—Velvet and pile fabrics—Pressing—Care of ironing equipment.

XXIII. SPECIAL LAUNDERING PROBLEMS 281

Types of rayons—Silks and rayons—Fabrics with special finishes—Elastic yarn—Specialty fabrics—Colored or printed cottons and linens—Fugitive colors—Velvets, velveteens and corduroy—Woolen garments—Men's washable suits—Foundation garments—Silk or nylon stockings—Washable gloves—Lace—Veils—Baby's wardrobe—Diapers—Crib sheets and pads—Turkish towels—Infected handkerchiefs—Mattress pads—Blankets—Bedspreads—Comforters—Quilts—Slip covers—Curtains—Draperies—Washable rugs—Tinting and dyeing.

XXIV. PROFESSIONAL LAUNDERING AND DRY CLEANING 306

Modern power laundry—Modern dry-cleaning plant.

XXV. SPOTS AND STAINS 312

Procedure—Equipment—Chart of reagents—Formulas for reagents—Methods of removing spots and stains—Rings: cause, prevention and cure—Alphabetical table for stain removal.

Section Four: *THE DECORATOR'S TOUCH* 326

Slip covers—Curtains and draperies—Dressing table frou frou—Headboards and bolsters—Monogrammed bed linens—Gay tablecloths and napkins—Tufted rugs.

Section Five: *CONTROL OF HOUSEHOLD PESTS* 345

Insecticides: sprays, powders, poison bait, fumigants, safety precautions—Pest control firms and their reliability—Alphabetical list of pests for identification and control—Special moth-proofing and fumigating of furniture and closets—Moth-proof storage—Chart of pests grouped according to where they may be found.

Section Six: *SMALL ELECTRICAL EQUIPMENT* 387

Mixers—Roasters and ovens—Coffee makers—Waffle bakers—Table grills—Toasters—Care of cords and plugs—Cost of operating.

Section Seven: *MOVING DAY* 398

Planning—How to pack—Storing furniture—Closing the house for the summer—Closing the house for the winter.

Part III

OPERATION AND MAINTENANCE OF THE HOME

Section Eight: *THE HOUSE ITSELF*

XXVI. HEATING AND AIR CONDITIONING 413

Kinds of central heating systems—Care of the heating system—Controls for heating systems—How to use fuels—Coal and coke—Table of anthracite sizes—Table of coal hardness—Table of coke varieties—Coke—Starting coal and coke fires—How to tell if the fire is right—Storage of coal—Disposal of ashes—Oil—Gas—Ways to save fuel—Improvements and additions—Table of relative humidity in room—How to tell when something goes wrong—Hot water for the home—Care and cleaning of hot-water heaters—Space heating—Care of chimneys.

XXVII. PLUMBING 451

Plumbing pipes—Table of required sizes for drain pipes—How to drain a system for winter—Water softening systems—Neutralizers—Plumbing fixtures—Ten don'ts for plumbing fixture care—Bathroom planning—Plumbing troubles and their cure.

XXVIII. THE UTILITIES 469

Electrical theory—Measurement of electric power and its cost—Typical wattage consumed by various electrical appliances—Figuring operating costs of electrical equipment—Adequate wiring standards Safety factor in electrical work—Electrical repairs—Care of electrical equipment—Gas: its availability—Measurement of gas—Service, repairs and safety—Water supply: the water itself and its sources—Pumping equipment—Water treatment—Sewage disposal—Telephones—Location of telephones—Saving time in use of the telephone.

XXIX. LIGHTING 503

How much light is desirable?—Light conditioning—Some dos and don'ts—Good lighting, room by room—Built-in lighting effects.

Section Nine: *REPAIRS THE AMATEUR CAN MAKE*

XXX. TOOLS FOR TINKERING 517

Table of essential tools for every home—Table of supplementary tools—Table of miscellaneous necessities.

XXXI. DOORS AND WINDOWS 528

Common troubles with doors: simple repairs—Windows: simple repairs—Window shades—Common troubles with Venetian blinds.

XXXII. REFINISHING AND REPAIRING FURNITURE 537

Removing the old finish—Preparing the wood for a new finish—Finishing methods—Shellac method—Varnish method—Staining—"Pickling" furniture—Painting furniture—Structural repairs—Reupholstering.

XXXIII. MISCELLANEOUS TINKERING JOBS 551

Screens—Storm sash—Weatherstripping—How to put up shelves, hooks, bars, and racks.

XXXIV. PAINT 558

What is paint?—Kinds of paint—Preparation of the surface—Thinning—Changing colors—Styling with color—Drying times and number of coats—How to paint—Don'ts for amateur painters—Painting equipment—Special products connected with painting—Special waterproofing problems—Financing a paint job.

INDEX 577

Illustrations

PAGE

When work is carefully planned, there is always more time for family fun 11

A tall storage cabinet for pots and pans 19

Shallow shelves provide convenient storage for canned foods 19

A tall cabinet with adjustable racks provides ideal storage space for pots and pans 19

Stepped shelves for storing small containers 21

"See-through" shelves make it easy to locate the package you need 21

Convenient cutlery rack 22

A partitioned sliding tray in a deep drawer 22

A deep drawer fitted with a rack for shallow pans and covers 23

Compact convenient storage space for pots and pans is part of a modern range 23

Cupboards with vertical partitions for trays 23

Ventilated vegetable bins near the sink 24

Several satisfactory racks which keep cutlery in good condition 25

A built-in mixer "garage" protects the mixer from dust 26

A pull-out lap table is a great convenience 28

An electric ventilating fan above a kitchen window 29

PAGE

A child's urge to help mother should be gratified as often as possible 33

A well organized planning center is important to every homemaker 34

Concealed in cabinets, laundry equipment in the kitchen is out of the way when not in use 41

A rack keeps spools of thread in order and easily available 44

An attractive cabinet which is sewing cabinet and occasional table 46

A sewing unit which occupies one wall of a living room: an open door reveals dress form, ironing board, and iron, a cover for unfinished garments and a vacuum cleaner; another door reveals a folding cutting table; a series of drawers for small equipment, patterns, etc. 47

The chairs encourage correct posture, the table is just right, and the tipless well-built stepladder helps a child to climb into his bed 51

A closet with adjustable clothes poles for the growing child 54

An ingenious piece of furniture which provides plenty of play space as well as storage space 55

A modern cabinet scaled to a young child's height and adapted to his needs 57

A bookcase for young children 59

A cupboard work-space arrangement for teen-age boys 60

A closet designed for a feminine wardrobe 65

Shallow shelves are best for linen storage 65

A closet designed for a masculine wardrobe 65

A convenient closet for storing sports equipment 68

PAGE

A budget based on the reward system can be a road map to your heart's desire 73

A sturdy step-stool with wide base and broad treads 97

Turn handles of pots and pans away from edge of range to prevent accidents 98

A basket to hold supplies for cleaning room by room 135

A cellulose sponge mop with a long handle and a two-compartment pail for floor washing 135

A pail with a tray top which holds cleaning supplies 135

Cleaning equipment stored compactly and conveniently in a corner wall space 138

Wall space, plus one shelf and one drawer in another location, provides for minimum cleaning equipment 138

An ideal cleaning closet can be constructed according to this plan 139

Use a special dough-type cleaner on a non-washable wallpaper 159

Use a cellulose sponge or soft cloth to wash a painted wall 159

Use the vacuum cleaner attachment to dust high moldings 159

A soft wall brush keeps painted walls free from dust 171

The Venetian blind brush saves time by cleaning several slats at once 171

Washable shades scrubbed with mild soap lather and a cellulose sponge 171

Good rugs deserve good rug cushions 174

Run the vacuum cleaner diagonally across a small rug and off the edge 174

Same rug, same bed after six months of use with different casters 175

Make a stiff dry soap lather for shampooing upholstery 191

PAGE

Use the flat tool attachment of the vacuum cleaner for deep crevices in upholstered furniture 191

Use a soft brush to dust carved wood furniture 191

Dust books with the soft brush attachment of the vacuum cleaner 199

Silk lampshades may be washed in mild soap suds if the fabric is sewed to the frame 199

Brush the coils of exposed radiators with a downward stroke 199

Stack washed dishes in the drainer and rinse with hot water 219

The dishwasher should be loaded carefully 221

A tray in the dishwasher holds silver in the correct position 221

Baby's "woolies" should be dried on frames 291

Gloves, socks and sweaters of wool dried on frames to keep their original size and shape 291

A curtain frame with ruler-like markings for stretching curtains to their original measurements 303

Boiling water, poured from a height, removes fruit stains 313

The "pad method" for spot removal 318

The "bowl method" for spot removal 318

Place an absorbent pad under the spot when sponging with cleaning fluid 320

Measuring a chair for a slip cover 327

Attaching the zipper closing on a slip cover 328

Steps in making a slip cover 329

An organdy dressing table skirt 337

Decorator tricks with headboards 341

PAGE

A luxurious twine rug is easy and inexpensive to make 343

Silverfish, black widow spider, and bedbug 353

Termites, cockroaches, buffalo beetle, and clothes moth 359

Steps in fumigating upholstered furniture 372–373

Steps in fumigating a closet 377

Keep a file of manufacturer's guarantees 388

A strip of oilcloth pockets for direction booklets 388

Remove crumbs from waffle grids with a stiff wire brush 393

Use a soft brush to remove crumbs from the toaster 395

A strip of outlets in the preparation center 396

Barrels and boxes should be carefully labelled when moving 401

Fine china should be packed and unpacked by the employees of the moving company 401

Moving companies can supply cartons for standard size mattresses 403

Wardrobes of this type transport your clothing easily 405

The fuel bed of hand-fired chestnut anthracite burning properly 429

The way the fuel bed of hand-fired coke should not *look* 429

The way the fuel bed of hand-fired coke should *look* 429

Diagram showing how an attic fan draws air through and out of a house 441

Six typical bathroom floor plans 463

A typical electric meter used in home installations 474

A typical gas meter used in home installations 474

The modern fuse panel, flush mounted on the kitchen wall 479

Steps in replacing a cord in an appliance plug 485

PAGE

A "footcandle" is the unit used in measuring light 504

The light meter measures intensity of light in "footcandles" 504

A ceiling fixture above the ironing board casts unshadowed diffused light on the work 507

An I. E. S. study lamp sheds diffused light of correct intensity on "home work" 511

Torchières provide indirect lighting in a dining alcove 513

Good lighting in a bedroom 513

Good lighting in the kitchen is essential 515

How to pull out a nail 517

How to use a screwdriver 517

How to use a saw 517

A well equipped work bench for the man of the house 518

Necessary tools can be stored compactly in a small space 519

A heavy wrench, a hammer and how to hold it, a hatchet, and an adjustable wrench 520

Frequently used tools 521

Section of a door showing the latch and latch plate 530

Ward and bolt 532

A broken table leg can be mended with a dowel 544

A well organized paint storage cabinet 573

PART I

ORGANIZATION OF THE HOME

CHAPTER I

WHEN YOU HUNT A HOME

The house you live in, whether it is small or spacious, affects the kind of living you will do in it. Careful selection of the physical home —an apartment, a new house or a house you buy to remodel—is a primary job of setting up housekeeping. Let analysis of your habits and taste guide you in choosing your home. Don't try to "keep up with the Joneses" by selecting a neighborhood where families on the whole have a larger income than your own. Rather, choose a locality where your neighbors will have comparable incomes and interests.

What to Look for When You Rent an Apartment

(Take this check list with you when you are house-hunting.)

1. An apartment that suits the taste of your husband and yourself:
   _____ Its location in the part of town where you have friends.
   _____ Its accessibility to transportation to your husband's place of business.
   _____ Its size—big enough so you don't get in each other's way, not so big that housekeeping becomes a burden.
   _____ Its personality—up-to-date, charming, cosy or spacious—depending on what you feel expresses you.

2. An apartment costing no more than 25 per cent of your total income, including all fixed charges which can't be changed during the period of the lease:
   _____ Gas
   _____ Electricity
   _____ Telephone service
   _____ Commutation costs

3. A lease which is not too long—one year, preferably—so you won't be tied up before you are sure you wish to stay longer.

4. Absence of "front," unless there are special business or social

reasons for it. Ornate house lobbies and brass-buttoned doormen do not make a home.

5. The essentials of a good floor plan, including:
   - _____ Cross-ventilation in every room.
   - _____ Sunlight where desirable, as in children's rooms, dining room and kitchen. If possible, in living room.
   - _____ Convenient dining space, where table can be set without disorganizing whole living room.
   - _____ Privacy of sleeping quarters, so they can be shut off from rest of the rooms when necessary.
   - _____ Ample closets for husband's, wife's and children's things to be separately stored.
   - _____ Storage space for trunks, suitcases, linens, blankets, winter clothes.
   - _____ Provision for delivery service at or near kitchen.
   - _____ Efficient kitchen with cupboards and work spaces suited to your own requirements.
   - _____ Adequate wall spaces for furniture. (Get room dimensions and make a diagram to scale. Locate all your pieces of furniture on the diagram before signing the lease.)
   - _____ Enough well-spaced convenience outlets in each room (page 480).
   - _____ Space for easy entertaining.

What to Look for When You Buy a House

1. A neighborhood in which you will want to live for many years:
   - _____ Accessible to stores, church, schools.
   - _____ Populated by the kind of people you want for your friends and your children's friends.
   - _____ Convenient to your husband's place of business.
   - _____ Showing signs of growth as a residential community.
2. A price which will not mean too heavy a burden of payment over too long a period of time. Don't forget to include all the fixed charges:
   - _____ Interest and amortization of the mortgage
   - _____ Taxes
   - _____ Insurance

_____ Fuel for house heating
_____ Water and its heating
_____ Upkeep of car if used for daily transportation
_____ Gas
_____ Electricity
_____ Telephone
_____ Commutation
_____ Minimum repairs

3. Good construction:
_____ You will be wise to have expert advice on this, for much construction detail is hidden behind finished walls and floors. Get an architect, for a nominal fee, to look over a house you are considering; he will give you a reliable opinion as to its soundness.

4. An architectural style which is not "faddy" or in bad taste, which looks well on its site and mingles well with the houses near it.

5. A house which can expand as your family grows and its interests widen:
_____ Is there an attic which can be made into a room or rooms?
_____ Is there space to put on an addition later?
_____ Can the basement be made into a recreation or work room?
_____ Is there outdoor play space for children?

6. A floor plan providing the essentials of gracious living:
_____ Not too many stairs to be climbed each day.
_____ Front entrance separate from living rooms.
_____ Rear entrance into hall, not kitchen.
_____ No passageway through bedrooms to get to other bedrooms or bath.
_____ Sheltered access from garage to house.
_____ See essentials of a good floor plan under "What to look-for when you rent an apartment," page 4.

7. Adequate heating:
_____ Check to determine whether adequate circulation of heat in winter is provided for *every room*.

_____ Get your local fuel dealer's estimate of cost of heating the house with fuel already provided; check this figure against the cost of new equipment and/or another fuel, taking into consideration a long-term heating plan, before you make changes.

_____ Check costs involved if you change to automatic fueling by means of oil burner, coal stoker or gas burner which takes the drudgery out of heating problems.

_____ Note availability and delivery cost of new fuel and find out what must be done about regular servicing or ash disposal.

_____ Plan for adequate storage facilities for fuel.

8. Garbage disposal:
   _____ Method
   _____ Cost, if any

9. Good plumbing:
   _____ Check whether the water supply is safe and adequate.
   _____ Make sure plumbing is installed according to local health and building regulations.
   _____ Find out if plumbing noises have been eliminated.
   _____ Downstairs lavatory if possible.

10. Modern electric wiring:
    _____ Have your electrician check on the number of circuits and size of wire in the house; standards of adequate wiring have improved with the increase in use of electrical appliances.
    _____ Check to determine number of convenience outlets wherever lamps, vacuum cleaner, radios, toasters, etc., may be used.

11. Sound walls, floors and ceilings:
    _____ Inspect the condition of the surfaces of the rooms to see if any repairs must be made before redecorating.

What to Look for When You Buy a House to Remodel

1. A house shell—foundations, walls and roof—requiring very little structural change—style of architecture in good taste, not "faddy":

_____ Visit the house on a rainy day, if you can, to see if roof leaks or cellar is wet.

_____ Have an expert go over the structure to check on condition of weight-bearing partitions, rafters, sills and old chimneys.

_____ Have an expert check for evidence of dry-rot or termite infestation.

_____ Remember a coat of paint works wonders if the surface it covers is in good condition.

2. A house large enough to allow for sufficient number of rooms within the original walls. Addition of whole wings is more costly than repartitioning the existing interior.

3. A house which can be "oriented" to take advantage of sunlight and air:

_____ Consider, before you begin, if there will be sunlight and cross-ventilation where you want it, when you remove or add partitions.

_____ Don't forget ventilation in cellars and attics.

4. Room arrangements which can be changed easily for a better floor plan:

_____ End of a hall which can be made into a bathroom.

_____ Large kitchen which can be made into kitchen and breakfast nook.

_____ Two small rooms which can be thrown into one.

_____ Wall space between rooms where closets can be made.

_____ Walls which can take a dining or greenhouse bay to give additional space.

_____ Large bedrooms into which extra baths can be built.

_____ Attics which can be insulated and made into rooms.

5. Wall and floor surfaces which can be modernized by new materials such as:

_____ Wall canvas to cover cracked plaster walls.

_____ Prefinished wallboards in color or wood-graining, some of which insulate as well as decorate.

_____ Plastic paints which adhere to old surfaces and allow textured effects.

_____ Stock mouldings and wainscotings, door frames, etc.

_____ Easily laid floor linoleum, asphalt or cork tile, rubber tile or sheeting, prefabricated floor boards and parquet blocks.

_____ Glass brick insets or partitions where light is at a premium.

6. Condition of plumbing, if any:

_____ Figure in the cost of installing a private water supply and sewage-disposal system, if the house is in the country.

7. Condition of heating plant, if any. (See Adequate Heating, page 5, this chapter.)

8. Availability of utilities:

_____ It is costly to add electricity if the power lines are not already on the road.

_____ Check up on cost of cooking with bottled gas, electricity or kerosene, if the house is not on a city gas or electric line.

9. Check points under "What to Look for When You Buy a House" (pages 4-6, this chapter).

CHAPTER II

BUDGETING YOUR TIME

Housekeeping is a real job—a job that needs to be planned carefully if one would avoid becoming a slave to housework or have free time for social activities and outside interests.

The easiest way to plan housework is to make a schedule which assigns each household task to the particular day—or perhaps even the particular hour—when it can be done most quickly and conveniently.

The benefits of such a schedule are many:

1. It relieves the uncertainty and nervous strain of "never knowing when you'll get things done."
2. It allows more things to be done in a given length of time.
3. It allows planning for leisure pleasures with the comfortable, confident feeling that housework need not be neglected.
4. It allows planning the work of a part-time or full-time helper, so that endless repetition of orders is avoided and more satisfactory assistance for the money spent is obtained.

In short, when a schedule has been followed until it becomes second nature, you run your house; it doesn't run you.

How to go about making a schedule? First write down the jobs that need to be done every day. Next write down the tasks that need to be done on a particular day of the week. Then make a simple chart, and write down each job at the day and hour when it is most convenient to work it in.

We can help establish individual schedules by setting up a skeleton plan which can be added to or altered according to specific needs. The lists on page 10 are a start toward making a reasonable plan for scheduling daily and weekly activities.

No two homes are exactly alike, and different conditions affect the work schedule. If there is a small baby, the whole household schedule must be built around the schedule which the doctor prescribes for the baby, and more often than not there is very little time left for housework, particularly if household help is not employed. A recent study showed that the care of a new baby takes 5 hours and 41 minutes

[*Continued on page 13*]

NECESSARY DAILY ACTIVITIES

A. Food planning, table setting and food preparation.
- Cooking and serving breakfast, lunch and dinner
- Washing dishes
- Kitchen clean-up (page 253)

B. Child care.
- Bathing and dressing
- Feeding
- Exercise and fresh air
- Special training
- Recreation and companionship

C. Light cleaning and straightening of rooms.

D. Special.
- Correspondence
- Sewing and mending
- Personal laundry
- Personal care (better schedule exercise too, if you need it)
- Gardening
- Keeping accounts (page 71)
- Care of pets
- Chauffeuring for family

E. Rest, recreation and reading.

NECESSARY WEEKLY ACTIVITIES

A. Thorough cleaning of rooms (page 227).

B. Meal planning and marketing (frequency depends on storage space and food-buying habits).

C. Laundering.
- Washing
- Ironing
- (Or sending to professional laundry and checking when returned)

D. Special child care.
- Medical or dental
- Shampooing
- Shopping
- Special lessons
- School affairs

E. Special.
- Silver cleaning (page 213)
- Closet cleaning
- Care of clothing
  - Sewing and mending
  - Pressing
  - Sending to dry cleaner
- Special baking
- Shopping
- Personal care

F. Rest and recreation.
- Club work
- Sports
- Exercise
- Theatre, concerts, movies, etc.
- Reading

G. Entertaining.

Photograph by Ewing Galloway

When work is carefully planned, there is always more time for family fun.

Skeleton Housework Schedule for Weekdays

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday*
Early Morning	Preparing and serving breakfast					→
Forenoon	General pick-up. Light cleaning of rooms (pages 230–253)					→
	Washing† if done at home; if not, send laundry out	Marketing§ or ironing‡	Specific jobs such as silver polishing, shopping, sewing or something to be carried on throughout the day	Thorough cleaning of rooms (pages 230–253)	Thorough cleaning of rooms (pages 230–253) Marketing§	Special food preparation for week-end
Noon	Preparing foods for lunch and dinner Lunch, Dishes, Cleaning up kitchen					→
Early Afternoon (until 2)	Finish washing†	Finish ironing‡ Put away ironing Marketing§ if not done in morning				
Late Afternoon	Rest, Relaxation, Correspondence, Reading, Personal care, etc.					→
	Final dinner preparation					→
Early Evening	Washing dishes					→

* Careful planning may keep your Saturday free for recreation.

† Many homemakers still prefer to wash on Monday; others find Tuesday more convenient; and some prefer to stretch the work over the entire week.

‡ If washing is done on Tuesday, ironing is put forward to Wednesday.

§ The bulk of marketing should be done on a day when local stores offer special prices. Often Friday and Saturday are bargain days.

[*Continued from page 9*]

every day. But after all, baby's well-being is of far more importance than any other phase of housekeeping, and if some other work has to be neglected or done less thoroughly, this state of affairs should be accepted philosophically.

Young children, children of school age, an invalid or elderly person to be cared for all necessitate special adjustments in work schedules. If one or more household helpers are employed, their work schedules must dovetail with the homemaker's.

After trying conscientiously to follow a schedule for a week or more, it is time to check up. If the day seems crowded, and if it is difficult to do all the work that is scheduled for a given day, there may be a remedy. Here are a few questions that may get to the root of the trouble:

1. Have you tried to do too much on one day? If so, move one or two tasks to less crowded days.

2. Do you know the one best way to accomplish a given task? (Part II of this book will help you.)

3. Do you collect all the materials, ingredients or pieces of equipment that you need for a specific job before you begin? This always saves time and steps.

4. Are your housekeeping tools and materials efficient, easy to use, and in good condition? Poor tools slow down work. For example:

   (*a*) Is your sink too high or too low for comfort? (page 27).

   (*b*) Is your cleaning equipment right for the jobs to be done? (page 140).

   (*c*) Is your vacuum cleaner or carpet sweeper kept emptied and ready for use? (page 132).

   (*d*) Are your knives sharp? (page 224).

5. Is the place where each job is to be done arranged conveniently?

   (*a*) Is your kitchen arranged for "one-handed" work? (page 20).

   (*b*) Is kitchen equipment stored at the place where it is used? (page 16).

   (*c*) Is the lighting adequate for the work? (page 28).

(*d*) Are beds set away from the walls so that you can make them easily?

(*e*) Is your cleaning closet orderly and well arranged (page 137) so that you can get things in and out easily?

6. Do you take too long to do a specific job?

Keep a record of the time it takes to do ordinary tasks like dishwashing and bedmaking. If it seems overlong, see if you cannot find short cuts which not only speed up the work, but do it more efficiently. Study the job, study the working conditions and study the right methods. Skill and speed can be acquired through practice.

7. Are your standards of housekeeping too high? For instance:

(*a*) Are you too tired at night to enjoy your family?

(*b*) Do you have time to play with the children?

(*c*) Do you consider silver polishing more important than a picnic? Couldn't the polishing wait until tomorrow?

CHAPTER III

CONVENIENT KITCHENS

Did you ever keep a record of the number of hours you spend in the kitchen each day? If so, you undoubtedly found that the total was high because so many household activities are carried on in this one room. How important it is, then, to make the kitchen a pleasant and efficient place in which to work.

Perhaps your kitchen is awkwardly arranged and inconvenient in many ways. Perhaps you have felt that this condition must be endured because improvements would cost so much. But we believe that if you keep your own kitchen in mind as you read this chapter, you may find many ways to improve it at little or no expense. Sometimes familiarity causes blind spots which prevent our seeing things that another person can instantly point out to us.

In planning a new kitchen, or in attempting to make your present kitchen more convenient, first consider the three main jobs that are carried on in this room:

1. Preparation of food
2. Cooking
3. Cleaning up

Each of these three jobs needs a work center of its own, a section of the kitchen devoted to one particular job, where all equipment and supplies needed in carrying out that job are kept together. For example, the sink is the main piece of equipment in the cleaning-up center, and all supplies and small equipment that are needed in dishwashing, vegetable preparation, etc., should be stored in this center, and they should be stored so conveniently that no waste motions or steps are necessary in order to get at them.

Then, too, all three centers are so closely interrelated that they should be co-ordinated in order to save steps. The sink, for instance, is used for certain steps in food preparation as well as for clearing up, so that it should be near the food preparation center.

Check the work centers in your own kitchen against the lists that follow. See whether all necessary supplies and equipment are properly located; see whether you can reach everything without taking an

extra step, and find out how many things are far away or out of easy reach.

The food storage and preparation center should include:

1. Storage space for perishable foods (refrigerator)

2. Storage space for staple foods (kitchen cabinets)

3. Storage space for all tools and utensils used in food preparation:

Measuring cups and spoons
Mixing bowls
Electric mixer
Egg beater
Flour sifter
Pastry board and rolling pin
Pastry blender
Strainer
Food chopper
Fruit juicer
Graters
Teaspoons for tasting
Mixing spoons
Cutlery and rack
Knife sharpener
Shears
Cutters
Vegetable masher
Can, jar and bottle openers
Rubber plate scraper (for scraping batter from mixing bowl)

4. Storage space for baking and roasting equipment:

Casseroles, custard cups, ramekins, etc.
Muffin pans
Cake pans
Cake racks
Cookie sheets
Pie pans
Roasting pan and trivet
Utility tray

5. Storage space for baked goods

6. Storage space for recipes
   Card file
   Often-used cook books

7. A clip at eye level on the cabinet to hold a recipe card while it is in use, and a rack to hold an open cook book

8. Work space
   For mixing
   For serving cold foods

The cooking and serving center should include the following:

1. The range
2. Flat surface to receive hot dishes and for "dishing up"
3. Storage space for all tools and utensils used first at the range:

Coffee maker (if coffee is made with boiling water)
Cooking thermometers
Heat-proof glass measuring cups for measuring hot liquids
Measuring spoons
Teapot
Frying pans
Dutch oven
Deep-fat frying kettle and basket
Saucepans and covers
Double boiler
Kettles
Ladles, spatula, turner, fork

4. Storage space for platters, vegetable dishes, etc.
5. Storage space for pot holders
6. Storage space for condiments used for seasoning foods as they cook
7. Storage space for tea and coffee
8. A "pass-through" or windowlike opening to the dining room saves steps in setting and clearing the table and in serving.

The clearing-up center should include:

1. The sink or dishwasher sink with two drainboards, or one drainboard and counter space
2. Storage space for all supplies needed for dishwashing (list, page 218)
3. Storage space for kitchen linens
4. Garbage container (if sink is not equipped with a mechanical garbage grinder)
5. Waste basket
6. Roll of paper towels
7. Storage space at sink for tools and utensils used to prepare food:

Coffee maker and coffee (if coffee is started with cold water)
Measuring cup and set of measuring spoons
Colander
Paring knife
Vegetable brush
Tea kettle (optional)

8. Storage space for vases, flower holders, etc.

9. Towel rack or electric towel dryer

10. Storage space for china, glass and silver in daily use, unless kept in the dining room

The three centers should not be widely separated from each other, and should be grouped, if possible, in such a way that work progresses in logical sequence through the following steps: delivery, storage, preparation, cooking, and serving. The range and serving center should be adjacent to the dining room door or "pass-through," if any, so that there will be no delay and no extra steps involved in getting hot dishes to the dining room.

The ideal kitchen has a small area of floor space and a large amount of free wall space. Several floor plans can be adapted easily for convenient routing of kitchen work:

1. *The U-shaped kitchen* is usually a fairly small almost square room with available wall space on three sides and the door to the dining room or living room in the other wall.

2. *The L-shaped kitchen* provides space along two walls for the three work centers. It is often possible to make use of this plan to convert a large rambling kitchen into a convenient work shop, utilizing the remaining space for 1) a breakfast nook, or 2) a small laundry, or 3) play space for children, or 4) a business center for the homemaker (page 34), or 5) a study center for older children, according to the needs of the particular family.

3. *The 2-wall or corridor kitchen* can be extremely convenient to work in because it is step-saving in its compactness. However, if there is a door at either end, it resembles a passageway and is apt to be used as one unless you insist on your rights as director of traffic. Ideally there should be only one door in a kitchen of this type.

4. *The 1-wall or Pullman kitchen* is often found in apartments, small houses, summer camps, etc. In a kitchen of this type, lack of storage space is the major problem.

Breakfast Nooks or Snack Bars

Many families eat at least one meal a day in the kitchen—usually breakfast—and all families count among their members at least one "ice-box raider" who forages at bedtime. It is always fun to visit the kitchen for a snack after a late party or the movies, and, when the homemaker is alone at noon, it is much easier for her to eat lunch in the kitchen. Definitely, then, there is a trend toward eating in the

Photographs by Lazarnick and H. I. Williams

Left: A tall storage cabinet for pots and pans has an interior arrangement which uses hooks, shelves and racks and provides a file for trays, shallow pans and cake racks in the base.

Center: Shallow shelves at the food preparation center provide convenient storage for canned foods.

Right: Another tall cabinet, located near the range, and fitted with adjustable racks and movable hooks provides ideal storage space for pots and pans. The covers are filed in the lower part of the cabinet.

kitchen, and modern architects are providing breakfast nooks, snack bars, or a planned area in a large kitchen in recognition of this trend.

Too often the alloted space is a bit on the cramped side, particularly if the furniture is built-in. Keep an eye on this, if plans are being drawn up, and be sure there is room for a comfortable distance between the table and the chairs or benches. There should be a clearance of 18 to 20 inches between the edge of the table and the back of the chair when a person is seated at the table.

Good lighting is essential. A recessed central fixture or indirect lighting may be used (page 508).

Electrical table equipment is used most often in a breakfast nook, and a cupboard or shelves should be provided for storing it. China used for breakfast service may be kept here also, as well as table mats, runners or small tablecloths and napkins.

The Butler's Pantry

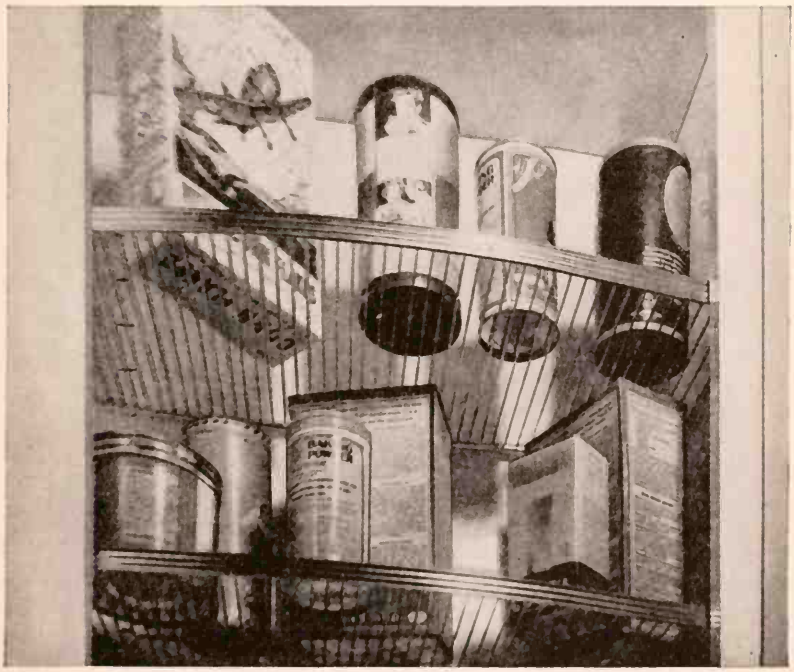
In large homes the butler's pantry relieves the kitchen of some of its chores. It is usually equipped with a second refrigerator, a sink or dish-washing-sink, working surfaces and storage space. Cold foods are served from the pantry, and dishes, glass and silver are washed and stored there. Table linen is often stored in this location too. And if desired, part of the pantry is easily transformed into a bar, where the necessary supplies for mixing drinks can be kept at hand.

Storage Problems

The storage area at each of the three work centers should be planned for greatest convenience. Shelves, drawers and cupboards, for example, are often too deep to be efficient. Minor changes often can bring about major conveniences. Try to store each piece of equipment so that it can be reached and lifted with *one hand*. For example, it is much more convenient to stack bowls of the *same* size together, rather than to nest bowls of different sizes. Unlike utensils should never be stacked. Like things should be stored with like, and things used most often should be easiest to reach. Table tops should be kept cleared for action, and not used to store canisters, etc.

Shelves should be adjustable. The supports can be clamped into perforated metal strips or grooved wood strips. Cleats or brackets can also be used to hold the shelves.

Narrow shelves, just deep enough to hold one row of utensils or packaged goods, are an incentive to orderliness, and save time and tempers usually lost in groping.



Photographs by Patricia Hall and William H. Zerbe

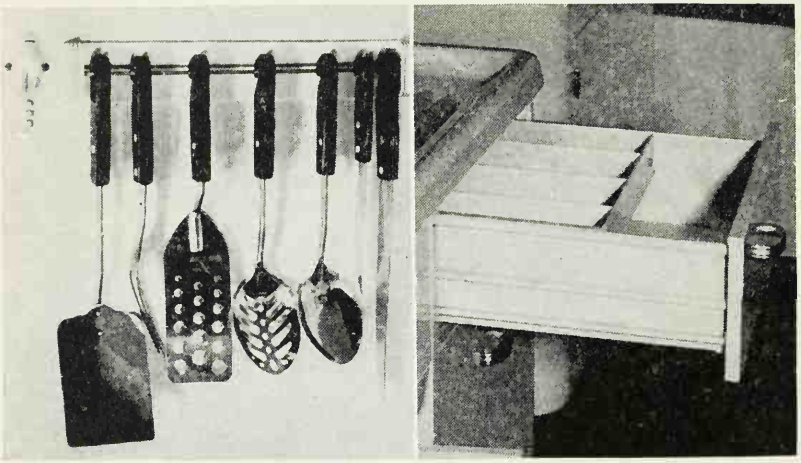
Top: Stepped shelves for storing small containers do away with clutter and confusion at the preparation center.

Bottom: "See-through" shelves make it easy to locate the package you need.

Deep cupboards can be equipped with sliding shelves which pull out and bring the contents into view.

High shelves should be reserved for articles that are seldom used. Remember that the "reach" of an average woman does not exceed 72 inches.

Stepped-shelves (see illustration, page 21) increase available storage



Photographs by Patricia Hall and William H. Zerbe

Left: Convenient cutlery rack.

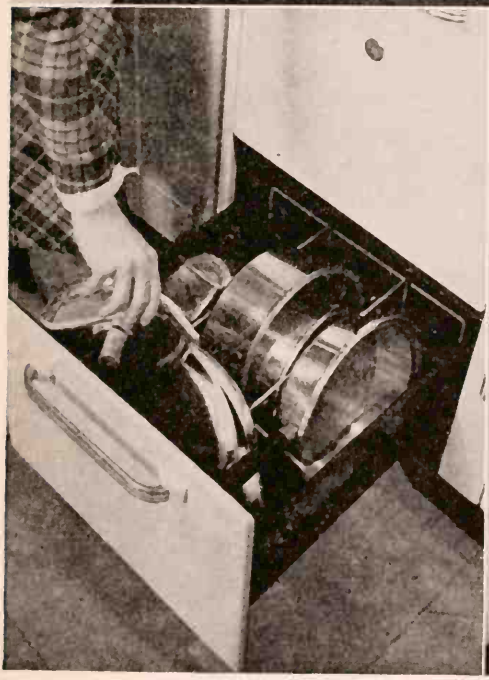
Right: A partitioned sliding tray doubles the storage space in a deep drawer.

space, and make it possible to arrange small packages or utensils so that they are easy to see and to get at. They are a great help in doing away with clutter and confusion.

Some shelf space for canned goods should be located at the food preparation center.

Partitions in shallow drawers segregate small tools and make them easily accessible. There is no need for such partitions to be deeper than ½ to 1 inch. Wood or metal strips make the most satisfactory partitions.

Cupboards may have areas divided with upright partitions to provide convenient storage space for trays, racks, cutting boards and other objects which are usually difficult to store (see illustration, page 23). Sliding horizontal partitions, with a cut-out section in the center front which acts as a pull, are also convenient, and both types greatly increase available storage space.



Photographs by William H. Zerbe

Top: A deep drawer fitted with a rack provides easy storage for shallow pans and covers.

Bottom left: Compact convenient storage space for pots and pans is part of a modern range.

Bottom right: Cupboards with vertical partitions provide a convenient filing system for trays.

Sliding trays for deep drawers provide "double decker" storage that does away with groping (see illustration, page 22).

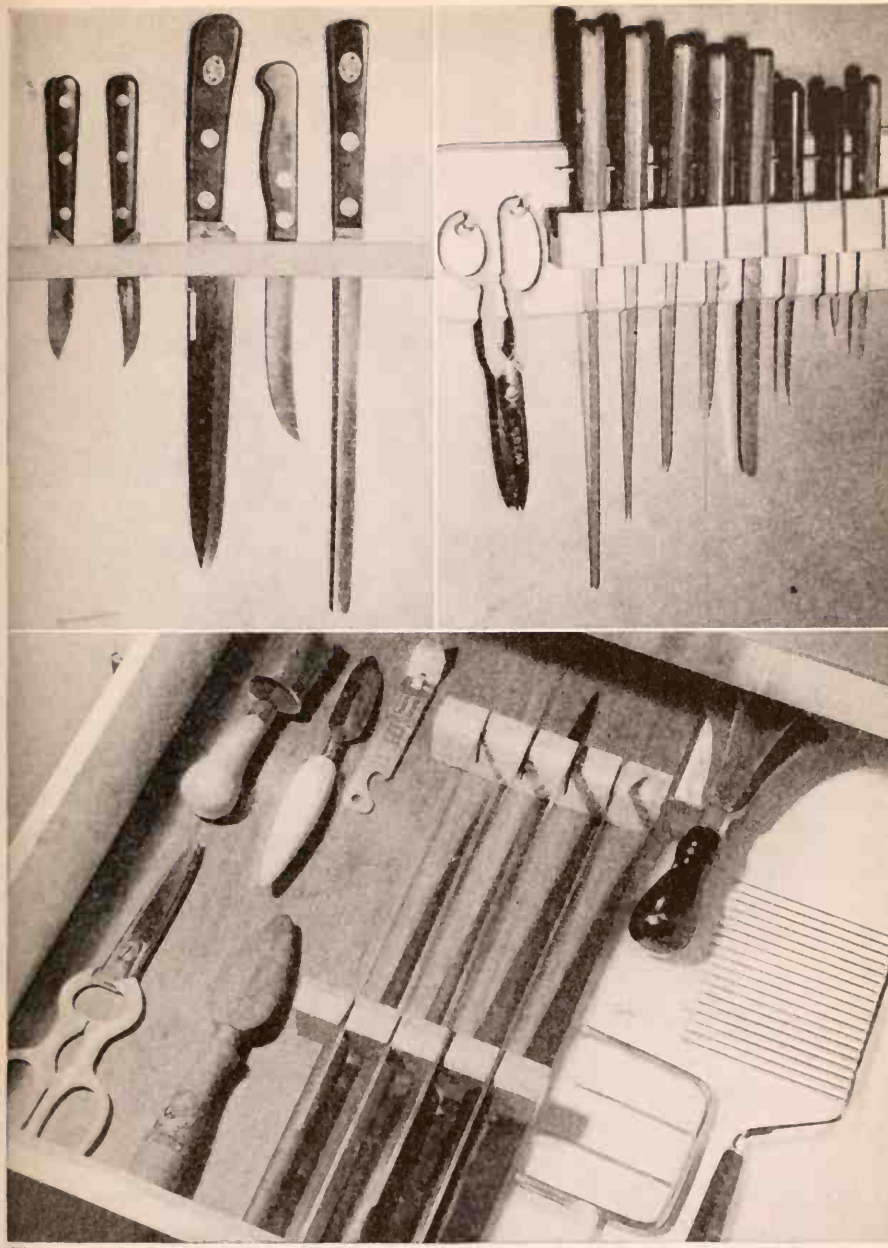
Deep drawers lined with removable metal or porcelain insets make efficient flour and sugar bins. Covers, fastened to the inside of the

Photograph by William H. Zerbe

Ventilated vegetable bins should be located near the sink for greatest convenience.

cabinet, remain behind when the drawer is pulled out, or lift up when the drawer is opened, and protect the contents from dust when the drawer is closed.

Racks solve many storage problems. If a rack is fastened to a cabinet door, it must be narrower than the door, and fastened far enough from the front edge of the door to allow the door to close. There must be enough free space inside the cabinet to provide for the rack when the door is closed. Shelves can be made narrower to provide such space.



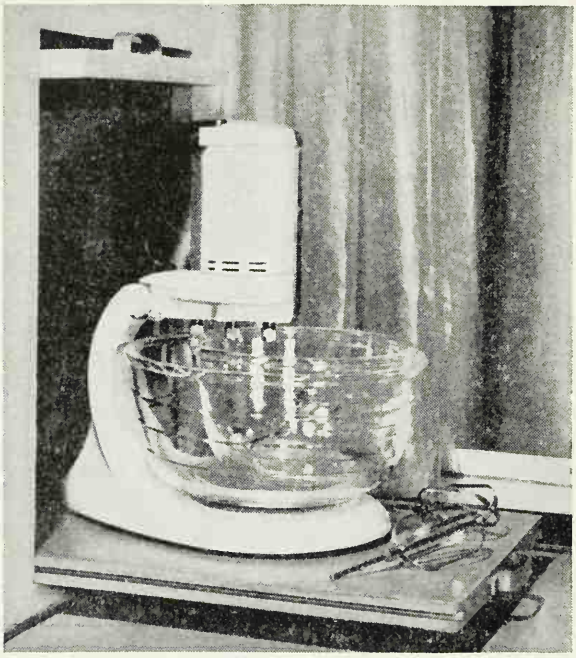
Photographs by Patricia Hall and William H. Zerbe

Cutlery should not be stored haphazardly. Here are several satisfactory racks which keep blades in good condition and prevent cut fingers.

If built-in storage space is scarce, racks may be hung on free wall space to accommodate covers for pots and pans and other awkward pieces of equipment.

Knives should be kept in a rack which is either fastened to the wall, or fitted in a shallow drawer (see illustration, page 25).

Portable or built-in *ventilated vegetable bins* should be located at or near the sink (see illustration, page 24).



Photograph by Patricia Hall

A built-in mixer "garage" protects the mixer from dust, but keeps it within easy reach.

Space for *storing paper bags,* wrapping paper, waxed paper, string and scissors is essential.

A *built-in "garage"* for the electric mixer, located at the food preparation center, is a desirable feature (see illustration above). The floor of the "garage" should be flush with the working surface, to do away with lifting, or the floor can be designed to pull out or swing out, to bring the mixer within easy reach. Shelves for mixer attachments should be located just above the "garage" or beside it.

Working Areas

A seemingly unimportant detail like the wrong height of a working surface can collect a high toll in discomfort and excess expenditure of energy. Did you know that it requires four and one-half times as much energy to work at a table or sink that is too low as it does to work at one of correct height?*

No one height is correct for every one. For example, a woman 62 inches tall could not work comfortably at a table that was high enough for a woman 67 inches tall. Other factors, such as length of arms and length of waist, also affect correct working heights for surfaces. However, you can easily determine the height that will be best for you in the following way†: stand erect in front of your kitchen cabinet or work table. Hold your arms flexed with the palms of your hands extended over the working surface. If they rest on this surface as you stand erect, the table is of the correct height for you (don't stoop or bend). If the surface is 2 inches below the palms of your hands, it should be raised that much, etc. The height of the *floor* of your sink should be the same as the height of the table. Comfortable heights vary from 32½ to 36 inches. If it is impossible to raise the sink, raise the dishpan instead, by using a wooden rack.

The right-hand drainboard of the sink, where soiled dishes are stacked, should be 32 to 36 inches long and 24 inches wide. The left-hand drainboard, which holds the dish drainer, should be at least 20 inches long and 24 inches wide.

The working surface at the food preparation center should be 36 to 60 inches long and 22 to 27 inches deep. A pull-out pastry board, located at this point, should be 24 to 30 inches wide.

Toe space 3 inches high and 3½ to 4 inches deep should be provided at the base of the kitchen cabinets.

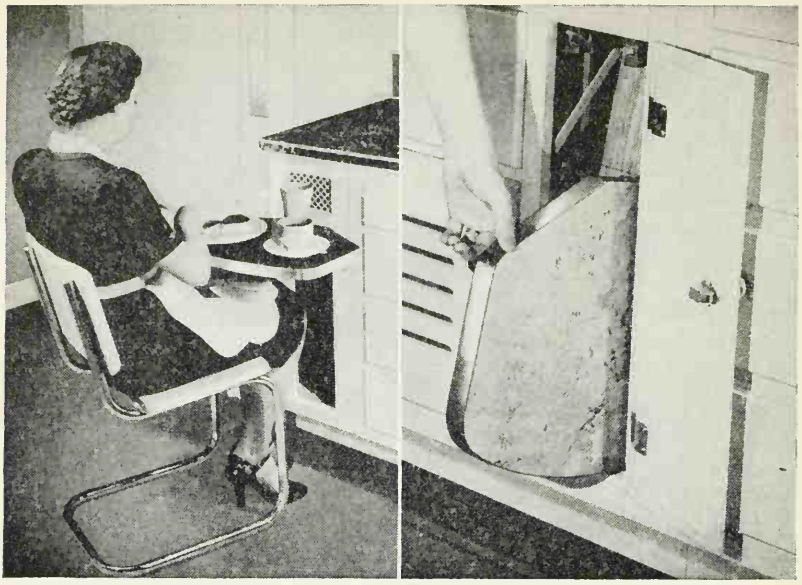
There should be a clearance of 15 to 18 inches between the working surface and the cabinet above. Shelves in this upper cabinet need be only 12 to 14 inches deep.

A lap-table, which is really a pull-out board, provides a place where it is possible to sit comfortably while preparing vegetables and other foods (see illustration, page 28). It should be placed 25 inches above the floor and should be 30 inches wide, so that it can hold two bowls or saucepans safely. The seat of the chair should be 14 to 17 inches from the floor.

The passageways which separate work centers or which provide

**Planning the Efficient Kitchen*. Extension Bulletin 217, Extension Service, State College of Washington.

†*The Home Kitchen*. Massachusetts State College Extension Service.



A pull-out lap table is a great convenience and finds many uses in the kitchen as an extra working surface.

clearance in front of the sink, range and refrigerator should be wide enough for safety and convenience*:

Space between two opposite work centers—48 inches

Width of passage past sink, range and preparation center—36 inches

Space in front of sink—27 inches

Space in front of refrigerator—32 inches (this allows for a 2-inch safety margin when the door is open)

Space in front of range—36 inches (this allows for room to pass when the oven door is open)

Lighting and Wiring

Good lighting is essential in the chief workroom, because there are tasks to be done at hours of the day and during seasons of the year when we have to depend on artificial light.

There must be a ceiling fixture equipped with a 100–150 watt bulb,

**Planning the Kitchen,* by Maud Wilson. Oregon Agricultural Experiment Station, Oregon State College, Station Circular 131.

to provide general illumination for the room. This general lighting should provide a 5 to 10 foot-candle rating (page 505). In addition, each work center must be well lighted and these auxiliary lights should be controlled by switches near at hand. The foot-candle rating (page 505) at each center should be 10 to 20.

Soffit lighting above or on both sides of the sink is most satisfactory. Recessed tubular lighting or shaded bulbs to throw light on work surfaces can be installed on the underside of cabinets located above work surfaces.

Lights inside cabinets are a great convenience, and can be installed so that opening or closing the cabinet door controls them.

An electric refrigerator should be controlled by a separate wiring circuit, if possible. All switches and circuits should be planned carefully to insure a high enough voltage for efficient operation of all electrical appliances (page 477). At least one double convenience outlet should be located at the food preparation center, and another should be installed in the breakfast nook (page 20).

Photograph by Patricia Hall

An electric ventilating fan above a kitchen window draws out cooking odors and brings in fresh air.

Ventilation

It is, of course, extremely important to provide good ventilation for the kitchen. Heat and cooking odors should be drawn out, and fresh outside air brought in.

Cross ventilation, provided by windows on two walls, is ideal. The top of the windows should reach to within 1 foot of the ceiling in order to ventilate the upper third of the room, where steam, odors and smoke linger. If cross ventilation is impossible, because of the location of windows, a transom above a door will help to keep the air fresh, if the door is opposite one of the windows. A Dutch door, which allows the upper half to be opened, also helps to provide cross ventilation, if it is opposite a window.

An electric ventilating fan, installed in the upper section of one of the windows, or on the outside wall, will bring in fresh air and draw out heat and cooking odors (see illustration, page 29).

A ventilating fan or hood over the range will draw off steam and cooking odors.

A portable electric fan, placed opposite an open window, is an aid to air circulation in hot weather, and adds greatly to kitchen comfort.

Finishes and Surfaces

Walls, floors and working surfaces in a kitchen should be durable, easy to care for and attractive. You will find a description of various types on pages 31 and 143–167, and from them you can select the finish you prefer.

Walls, Ceiling and Woodwork

Walls should be washable, of course. On pages 157–167 you will find many kinds of wall finishes discussed in detail. You can select any type that falls within your budget from among the ones that can be washed most easily. The ceiling and woodwork should also have a washable finish. Walls, ceiling and woodwork should all be light in color so that the surfaces will reflect light. Ivory, cream, yellow, light green, blue, or gray are among the most popular kitchen colors. Do not select an intense color or one that is too vivid, as you may tire of it quickly. You can step up the color scheme by using dashes of vivid harmonizing or contrasting color in curtains and other accessories.

Floors

Kitchen floors get hard usage and the floor covering should be able to take it without showing wear for a reasonably long time. It should also be easy to clean.

The discussion of various types of floor coverings on pages 143–156 will guide you in making a wise choice. A plain, dark color is a poor

selection for a kitchen floor, because it shows up footprints, dust and watermarks. A marbleized or jaspé pattern in a medium color, or a small pattern in many soft colors, will prove most satisfactory for the kitchen floor. It should, of course, harmonize with walls and woodwork. Other notes of color in the kitchen may be keyed to the floor covering.

Work Surfaces

Work surfaces in the kitchen must be easy to keep clean. Linoleum, composition materials, pressed wood, stain-resistant porcelain enamel, monel metal, stainless steel, plastic material and hard wood such as maple, are all satisfactory. Joinings should be water-tight.

If *wood* (not pressed wood) is used, it should be given a preliminary treatment which will preserve its beauty. If it has been varnished or shellacked, the old finish must be scraped off. The surface is then treated with hot boiled linseed oil and rubbed down with fine steel wool. The next day repeat the oil and steel-wool treatment. The third day repeat again. The surface is now ready to stand hard wear without marring.

Linoleum and composition work surfaces may be waxed to preserve them. Liquid, paste, self-polishing or hard wax such as that used on automobiles, may be applied. Liquid and paste wax must be rubbed to a hard finish.

For directions as to the care of *stainless steel* or *monel metal,* see pages 212 and 215.

Plastic material needs only mild soap and water to keep it clean and in good condition.

The care of *porcelain enamel* is discussed on page 243.

Garbage Disposal

Your community's regulations concerning garbage disposal should be understood and followed carefully. In some communities, for example, paper must be kept separate from other garbage. Sometimes the town or city arranges for garbage collection, sometimes other arrangements must be made with a private contractor, at your own expense. Board of Health rules must always be observed.

The garbage container in the kitchen should be kept clean and free from odor (page 252). An outside garbage container should be cleaned thoroughly each time it is emptied. The method for cleaning is practically the same as for the smaller container kept indoors (page 252).

If your sink is equipped with an electrically operated garbage grinder,

you will have only tin cans and papers to dispose of in other ways. Manufacturers' directions for the operation and care of the grinder should be followed exactly.

Paper in the Kitchen

Paper has come to be a helpful ally in kitchen work. Absorbent paper towels, for example, can be used not only for drying the hands, but for wiping greasy pans, draining fried foods and other tasks.

Waxed paper, cellophane and aluminum foil are used to wrap foods to be stored in the refrigerator or carried to a picnic or to school or work. Then there are waxed-paper pan liners, already cut to fit standard-size cake pans.

Parchment paper finds many uses in the cookery field, and now we have parchment dish cloths and scouring cloths that are durable and non-absorbent. They can be washed out and used several times before they wear out.

Shelf paper is now available with a glazed finish that can be wiped off when soiled. Shelf edgings in gay patterns, made of paper, fluted cellophane or plastic, add a festive note to cupboard shelves.

Paper place mats, napkins and doilies in an amazing variety of excellent designs not only cut down on laundry work but give a bright accent to breakfast room or snack bar. Some place mats are moisture-proof and may be wiped off and used several times.

The Kitchen and the Family

Years ago the kitchen was looked on as the logical center for many social activities, and today we are swinging back toward this point of view. Just as we swung from the too large kitchen to one that was too small, and then to a happy medium, so we have swung from a kitchen that was a social center to one in which there was barely room for work, and no room at all for play, and now to a room where cooperative work or play is possible.

Small children are always intrigued by the work that is done in the kitchen. Almost invariably they want to "help," and if this urge is understood and valued, the children will find tremendous satisfaction in cooperative work, besides feeling "wanted," which is important to happy family relationships. Then, too, the educational value of guided cooperative work is an important factor in child training.

The pull-out lap board (page 28), if one is provided, makes a splendid work surface for a child. Or sturdy steps may make it possible for him to reach a higher counter or table.

Photograph by H. Armstrong Roberts

A child's urge to help mother should be gratified as often as possible even though work is slowed up a little.

A low cupboard should be reserved for toys or special cooking equipment that the children use. One end of the kitchen, away from dangerous areas near the range, can sometimes be reserved as play space. In this way, work or play goes happily on while mother is busy with her own multiple tasks.

Naturally such an arrangement may cut down on actual efficiency in the kitchen, but when real values are contrasted, it is easy to see how greatly the gain in child training and companionship outweighs any loss in cut-and-dried efficiency.

If possible, there should be one corner in the kitchen that is provided with a comfortable chair, where one can snatch a few moments' rest now and again between chores. There is much to be said for the old-fashioned rocker that once was standard kitchen equipment!

Photograph by A. F. Sozio

A well organized planning center is important to every homemaker.

The Business Center

The kitchen is one logical location for the homemaker's "office," which need not occupy much space if it is well planned.

Every homemaker needs a desk of some description, where accounts can be kept, shopping lists made out, recipes copied and quiet planning accomplished. Files of bills and receipts, manufacturers' direction booklets, guarantees, etc., should be located here, as well as reference books on homemaking problems.

A calendar is a necessity in this business center, and a small radio and extension telephone might well be part of the equipment. A bulletin board to keep the family posted as to each person's whereabouts, to hold reminders for the forgetful ones, to hold order lists, and to give news of general interest, may be hung on the wall.

Check Chart for a Truly Convenient Kitchen

(If your kitchen is perfect in its arrangement, every question will be answered by "Yes.")

I. Is Each Work Center Planned as an Ensemble?

1. *The food preparation center*

Near the table or main work surface is there

a cupboard for staple food supplies? _____
a refrigerator for storing perishables? _____
storage space for mixing and baking equipment? _____
storage space for spoons, knives, etc.? _____

Is this food preparation center

near the range? _____
not over 4 feet from clean-up center? _____

2. *The sink and clean-up center*

Near the sink is there

a cabinet for soap, cleansers, scouring supplies? _____
a drawer for dish towels, cloths? _____
a rack for dish towels, cloths? _____
a garbage can or electrical garbage grinder? _____
a storage space for vegetable brushes and paring knives, used at sink? _____
a place for colanders and coffee makers? _____
a storage space for vegetables? _____

Is this clean-up center

near the china cupboard? _____
not over 4 feet from food preparation center? _____

3. *The range and serving center*

Is there a flat surface near the range on which to set hot dishes for serving? _____

Is there space near the range for storing pots, pans and equipment used first at range? _____

II. Are the Working Surfaces the Correct Height?

1. Are the main working surfaces—table, cabinet top, etc.—of correct height for comfort? _____
2. Is *floor* of sink the same height as table top? _____

III. Are the Working Surfaces Big Enough?

(The following dimensions have been shown by many tests, to be the minimum amounts required for working conveniently in a kitchen.)

1. Is there a *right-hand sink drainboard,* at least 32 to 36 inches long and 24 inches wide? _____
2. Is there a *left-hand sink drainboard,* at least 20 inches long and 24 inches wide? _____
3. Is the working surface or table top where food is mixed and prepared at least 36 inches long and 22 inches wide? _____

IV. Is There Enough Convenient Storage Space?

1. Does each cupboard clear the working surface beneath it by at least 15 inches? _____
2. Are the shelves adjustable? _____
3. Are the shelves only 12 to 14 inches deep? _____
   (If deeper, can you make stepped shelves to help you reach things easily without groping behind other objects?) _____
4. Is there space to put up additional shelves and racks? _____
5. Is the equipment used most often placed where it is easiest to reach? _____
6. Is the refrigerator big enough for your family's needs? _____
7. Is there "toe room" at least 3 inches high and 3½ to 4 inches deep at the base of the sink or any cabinet in front of which you stand to work? _____

V. Is There Room to Work In?

1. Is there a clear space of 27 inches in front of the sink? _____
2. Is there a clear space of 32 inches in front of the refrigerator, to allow easy clearance for door? _____
3. Is there a clear space of 36 inches in front of the range? _____

VI. Is There Good Light, Wiring, Ventilation?

1. Is there one good ceiling fixture equipped with a 100–150 watt bulb? _____

2. Is there extra light
   at the range? _____
   at the sink? _____
   at the food preparation center? _____

3. Is there at least one double convenience outlet near the food preparation center? _____

4. Is there at least one double convenience outlet in the breakfast nook? _____

5. Is there cross ventilation to allow cooking odors to escape? _____

6. Is there a ventilating fan or hood over the range for drawing off kitchen odors? _____

7. Is there at least one window? _____

VII. Are Floor and Wall Finishes of the Correct Materials?

1. Is the floor of linoleum or other composition material
   that is easy on the feet and easy to clean? _____
   that is in good condition? _____

2. Is the wall finish durable and easy to clean? _____

3. Is the wall material such that extra shelves, racks, etc., can be fastened to it? _____

4. Is the woodwork painted with hard finish washable paint? _____

VIII. Are the Work Surfaces
   in good condition? _____
   easy to clean? _____

IX. Is the Kitchen Safe from Traffic Congestion?

Are there doors at one end of the kitchen or a back entry to prevent people tracking through the main work part of the kitchen every time they go in or out? _____

CHAPTER IV

PLANNED SPACE FOR LAUNDERING

Some laundry work is done in every type of home, even though more and more families are letting the modern power laundry take over the greater part of the job.

The amount of laundry done at home dictates the amount of space that should be given over to washing and ironing equipment. For example, if there are several children in the family, and if the greater part of the laundry is done at home, it is not an extravagance to devote an entire room to this work. On the other hand, if laundering is done only once a week, and if the total amount is small, it is not always practical to equip a whole room for this purpose alone. It is often possible to plan a combination room, part of which is devoted to laundering. Such plans are discussed farther on in this section.

The Laundry Room

If we devote an entire room to the work of laundering, where should it be located? For many years architects seemed to believe that the basement was the correct location. Recently the trend has been toward a room on the first floor. Which is better?

If the basement room is dry, clean, well lighted, well ventilated and cheerful, it can be an agreeable place to work. Then too, it is usually less expensive to install laundry equipment in the basement than on the first floor. However, a basement laundry will not be as convenient as one on the first floor, where it is easier to keep an eye on the children, answer the doorbell or telephone and perhaps catch up with kitchen work while the washer is operating.

Easy access to the drying yard is essential if clothes are dried out of doors. A sloping ramp, instead of stairs, from the basement laundry to the yard makes it easier to carry clothes in and out. The first floor laundry should be directly accessible to the yard.

A window looking out on the yard where the children play makes it possible to keep an eye on them while you are in the laundry. If the room is large enough, provide enclosed play space at one end for the toddlers, away from the hazards of equipment and hot water.

The laundry room divides itself into three or four work centers—three if no indoor drier is provided.

1. *Sorting and stain removal center*

At this center the soiled clothes are received and sorted. If there is a clothes chute, it should empty into a ventilated bin at this location. A counter, with shelves or cupboards above and space for bins on casters or baskets below, makes sorting easier. The counter surface should be smooth and easy to clean. Any of the materials suggested for kitchen work surfaces (page 31) are satisfactory.

If the wash is not large it may be sorted into piles on the counter, but if it is extensive, you will need bins or baskets to hold the sorted clothes.

A well-stocked mending basket, equipped with needles, thread, thimble, buttons, snaps, hooks and eyes, iron-on mending tape, etc., should be kept in one of the cupboards over the counter (page 261).

Spots and stains must be removed before clothes are washed, so all stain removal materials (page 314) are kept at this center.

Clothes are sprinkled at this center, unless additional counter space is provided at the finishing center, so the sprinkling device is stored here also.

A small table stove with one or two burners or elements should be located here. Starch and a large saucepan to cook it in are stored nearby, together with a tea kettle, large bowl or dishpan, measuring cup and stirring spoon.

2. *Washing center*

This center is built around the water supply. The laundry trays (we used to call them "set" tubs or stationary tubs) are here and the washer is nearby, where it can be wheeled into position easily. Double trays are an added convenience. Often the trays are set against the wall, but sometimes it is even more convenient to place them in the center of the room.

Soaps, bleaches, bluing, water-softening compounds (page 256), a measuring cup and measuring spoons should be stored near at hand, to save steps.

A floor drain is necessary unless the water from the washer can be pumped into the trays, and it is advisable to install a drain anyway, because some spillage is bound to occur.

A rack or low table on casters to raise the clothes basket to a convenient height which eliminates stooping and lifting is essential.

A soft brush, and a thermometer to check the temperature of the water are kept at this center.

3. *Drying center*

This may be the back yard, if you live in a neighborhood where the air is not contaminated by soot or smoke or acid gases. Or it may be a gas or electric drier, a tumbler-drier or an overhead drier in the laundry room.

4. *Finishing center*

Located at this center are the ironing board, electric hand iron, the ironer, if any, and a clothesrack.

The Room as a Whole

The centers should be arranged in logical sequence so that the work progresses through sorting, washing, drying and ironing with as few steps as possible.

The Kitchen-Laundry

If a laundry room is not necessary, because of the amount of washing and ironing done at home, or if it is impossible to devote a whole room to the work of laundering, a compromise can be reached by using the kitchen for this work.

If the kitchen is large, it is often possible to arrange it so that one end of the room is left free for laundry equipment. This arrangement is important because soiled clothing should be kept away from food and equipment used for cooking. The kitchens in many small houses and nearly all apartments are equipped with a sink and laundry tray combination. The tray should be reserved for laundry use only, for sanitary reasons, and the washing machine and washing supplies should be stored nearby, if possible. A kitchen table on casters, which can be wheeled over to the sink and used to hold the clothesbasket, is convenient.

Often it is easier to iron in the dinette or dining alcove than in the kitchen proper. If so, a built-in ironing board can be installed, if desired.

If space is limited, it is possible to select laundry equipment that can be stored in a minimum amount of space. For example, the automatic washer is admirably suited to kitchen installation, because it is so designed that it requires only a small amount of space. Some ironers are equipped with covers and can be used as a kitchen table when closed.

A new space-saving washer has recently come on the market, that will also be an answer for many a house or apartment that has no separate laundry facilities. This square washer is designed particularly

Concealed in cabinets, laundry equipment in the kitchen is out of the way when not in use.

for use in the kitchen and can be stored in a very small space. It is smaller than the ordinary machine, taking but four pounds of clothes at one time. This is, of course, a fair-sized load, particularly for the family that sends the sheets, bath towels and heavier things to the laundry. Adjustable legs make it easy to lower the washer so that its full height is only twenty-four inches. Lowered this way it will fit under the sink or even under the washstand in the bathroom. It can be raised, by means of an easy turning crank, to the convenient work-

ing height. Adequate provision has been made for filling and emptying the tub without lifting water. This washer can be equipped with an attachable ironer. Only one motor is used to activate washer, wringer and ironer. The wringer and ironer are interchangeable. In the base of the machine good space is provided for storing the wringer. The rotary ironer that can be bought separately is designed with a keen understanding of storage convenience. A heavy square-cornered frame acts as a base on which the ironer rests in an upright position, taking up no more storage room in a closet than a vacuum cleaner. Other ironers also may be stored in a closet where they are easily accessible, but out of the way when not in use.

The completely automatic washer is equally at home in a laundry or in a kitchen. It is compact, good-looking and carries the clothes through washing, rinsing and damp-drying with no fuss or bother.

The Laundry-Sewing Room

We like to call this combination room a "clothery," because all the operations for the care and maintenance of clothing are carried on within the four walls of one pleasant, comfortable and attractive room. It is one solution to the problem of making a given room as useful as possible, and it may even house the water heater and heating plant as well as the sewing machine. Such a room has three work centers: the sorting and washing center; the drying and ironing center; the sewing and repair center. The placement of these centers, in relation to each other, is largely a matter of floor plan, for while each bears a definite relationship to the other, the work carried on at each center is independent to a certain degree.

The sewing cabinet illustrated on page 47 could be used as the sewing center in the clothery, if desired.

The Kitchen-Utility Room

If the floor plan of the house will permit, a utility room housing laundry equipment and adjoining the kitchen is convenient. Folding doors make it possible to throw the two rooms into one.

Heights of Working Surfaces

The top edge of the laundry trays (tubs) should be 7 to 8 inches above the correct work table height (page 27).

The surface of the ironing board should be 1 inch lower than correct work table height (31 to 34 inches from the floor).

Lighting and Ventilation

Good natural light is perhaps more important in the laundry than artificial light, because laundry work is almost always done during the daytime hours. If the laundry is dark, however, the same sort of lighting as that suggested for the kitchen should be provided (page 28), with general illumination and auxiliary light at each work center. A "daylight" bulb to light the sorting counter shows up spots and stains and does not distort colors.

Several double convenience outlets should be installed in the laundry, at elbow height, to plug in the washer, ironer, electric hand iron, etc. See page 102 for precautions concerning the use of electrical equipment in the laundry.

Ventilation is of utmost importance in the laundry, and can be obtained in the same ways as those suggested for the kitchen (page 29).

Finishes and Surfaces

The walls of the laundry should be light in color, easy to keep clean, and moisture-resistant. A study of the various types of washable walls discussed on pages 157–167, and special damp-proof paints (page 574) will undoubtedly help you to select a suitable and attractive finish. The woodwork should have a washable finish also.

It is essential that the laundry floor be easy to clean, and resistant to moisture. It should not be slippery when it is wet. Among the floor coverings discussed on pages 143–155 you will find several that are suitable for installation in the laundry. From among these you can select the type best suited to your own needs and budget.

CHAPTER V

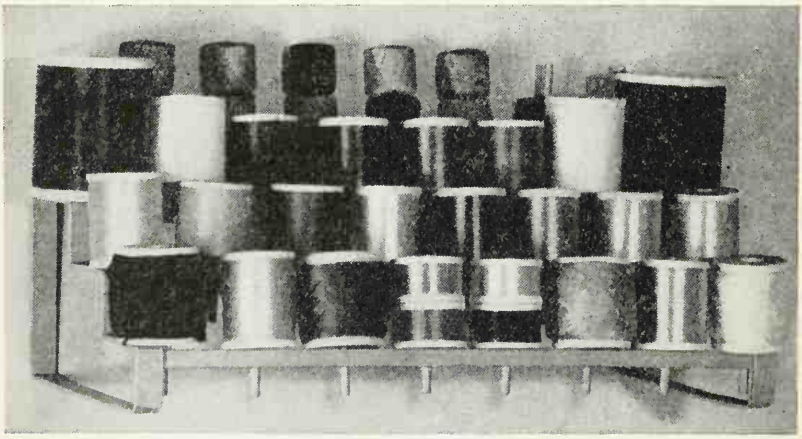
A PLACE TO SEW

Whether sewing is a hobby, a necessity, or a minor irritation, it usually has to be done. Even the most confirmed needle-haters will admit that it is easier and pleasanter to sew in a place set aside for the purpose, where everything necessary to the job is assembled.

The woman who loves to sew and who makes clothes for herself and her children will need plenty of space to work in—perhaps a whole room. The woman who reaches for a needle only when impelled by necessity may need only an orderly kit or, at the most, a sewing table.

Much sewing is really creative and in order to enjoy this form of creative expression, details should be organized. But all too often we rush over the entire house in an attempt to locate that spool of orange silk and a paper of needles when an emergency arises.

If tools and equipment are all located in one convenient place, the saving in time and steps is really amazing. First of all, we must consider the equipment itself. The following list includes everything a



Photograph by Patricia Hall

A rack which can be hung on the wall or on the door of a cabinet keeps spools of thread in order and easily available.

home dressmaker will require. The items that are marked with an asterisk (*) comprise the minimum equipment that is necessary no matter how little sewing is done:

Large Equipment

Cutting board or table
Sewing machine and attachments
Dress form
Full-length mirror
Ironing board
Electric hand iron

Small Equipment

*Needles, *thread, *dressmaker pins, *thimble, *snaps, *hooks and eyes, slide fasteners, buttons, etc.
*Scissors
Pinking shears
Darning "egg"
Tracing wheel
Patterns and fashion magazines
Materials, trimmings, bindings
Scrap bag
Tailor's chalk
*Tape measure, ruler and yardstick or hem gauge

The next problem is to select a location, where this equipment can be kept. Sewing is seldom an everyday job, and for this reason it is preferable to store the equipment compactly, yet in such a way that it is readily accessible. Even if an entire room is devoted to sewing, it is desirable to have a closet or cabinet where orderly storage is possible. On page 47 you will find such storage space illustrated. You will see that a cabinet of this type would not detract at all from the appearance of a living room, dining room, guest room, play room or laundry (see clothery, page 42), and modern sewing machines have become attractive pieces of furniture. Or you may prefer a portable sewing machine which can be stored when it is not in use.

In general the following storage facilities should be provided in a sewing cabinet:

1. Open shelves for magazines, boxes, etc.
2. A shallow drawer for spools of thread.
3. A deeper drawer in which patterns may be filed. A tab attached

to each pattern makes identification easy. The tab may be marked "Apron," "Play suit," or "Slip," etc., and the patterns filed alphabetically.

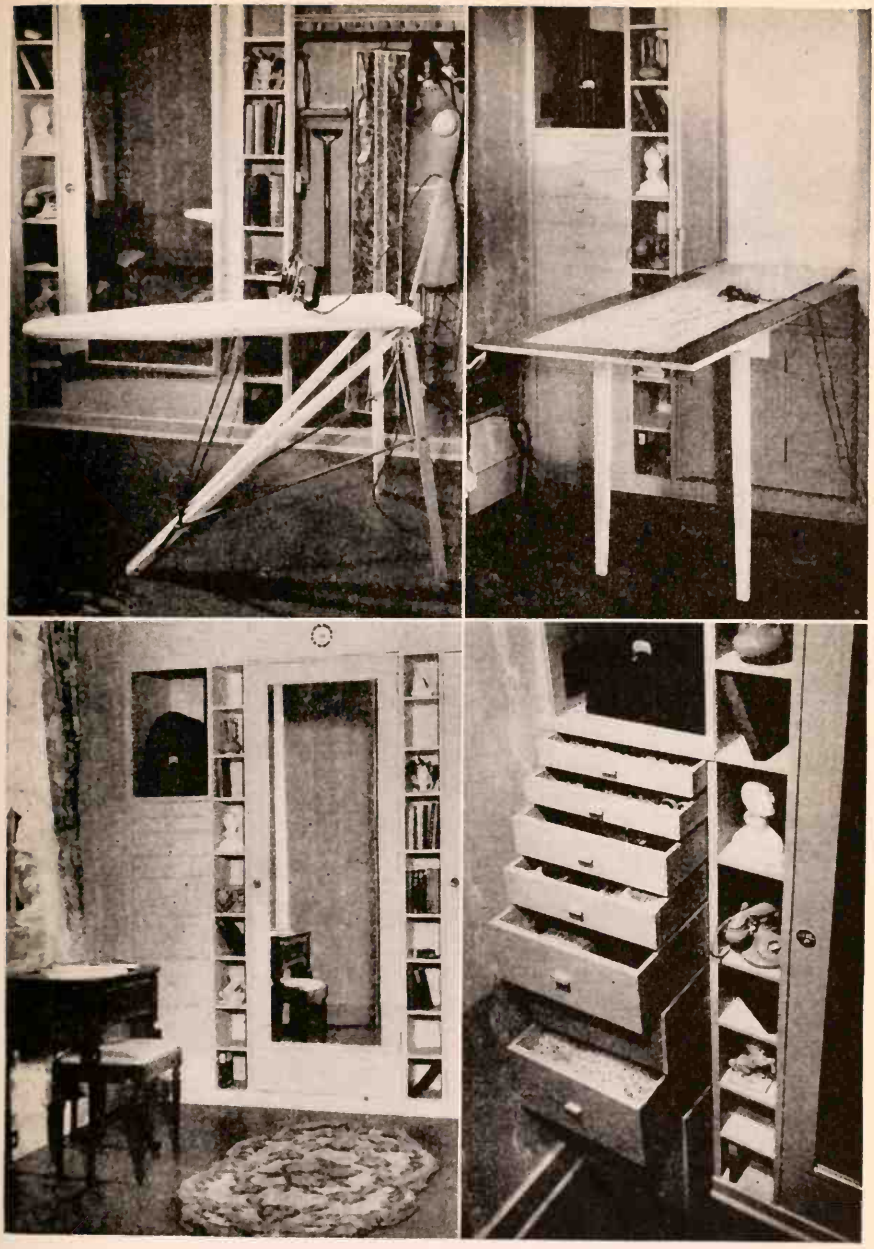
4. Drawer space for scraps of material, garments ready to be mended or altered, new materials, etc.
5. A rod or hook for dress hangers on which to hang garments that are in process of construction.

Photographs by William H. Zerbe

This attractive cabinet plays a dual role as a sewing cabinet and as an occasional table.

6. Space for the sewing machine, if necessary.
7. Extra shelves for additional sewing equipment or for other storage.
8. Space for a dress form if one is used.
9. Space for ironing board.

A card table makes a convenient work surface when one is sitting down to baste, pin or cut small pieces. The surface should be 21″ to 25″ above the floor. If much dressmaking is done, a long work surface for pinning and cutting patterns must be provided. A long table that can be folded and stored away between uses is most convenient. A board 40″ wide and 72″ long, covered with oilcloth may either be attached



This sewing unit occupies one wall of a living room. The table at the lower left is the electric sewing machine.

Upper left: The open door reveals dress form, ironing board and iron, a cover for unfinished garments and a vacuum cleaner to pick up threads.
Upper right: Another door reveals a folding cutting table.
Lower right: A series of drawers for small equipment, patterns, etc.

to the wall by hinges, or be designed with folding legs. An excellent folding-cutting board made of composition material which is not marred by scissors or pins is now on the market. This board can be placed on any flat surface steady enough to support it. An inexpensive unpainted gate-leg table makes a good cutting table. It may be finished in any of the ways suggested on pages 538–542. The cutting surface should be 35½ inches above the floor for a woman of average height.

A comfortable straight chair or bench of correct height will do away with stooping and make sewing more pleasurable.

It is a good plan to keep a second ironing board in the sewing room, and as excellent boards cost very little, this is entirely possible. A sleeve board and a sleeve cushion are helpful also. Pressing cloths, a sponge and basin may be kept in the sewing room if desired. The electric hand iron can be carried to the sewing room when it is needed, unless it is possible to keep a second one there.

Trays or shallow drawers in which supplies for hand sewing are stored should be portable for greatest convenience.

Good light is essential for sewing. The sewing machine should be placed so that light from the window will come from behind and over the left shoulder of the worker. Many sewing machines are equipped with an attached electric light. If yours is not, a light attachment may be purchased. If sewing is done in the evening, adequate illumination must be provided (page 505).

A small sewing kit makes it possible to carry sewing to the porch or garden, or to any room in the house where you may wish to work. And the smart business woman makes room in a desk drawer for a compact sewing kit which will take care of mending emergencies.

CHAPTER VI

CHILDREN'S ROOMS

A child is an individual, a little person with distinct characteristics and with needs and desires of his own. That statement may seem so obvious that you wonder why it was written. Nevertheless the child's status as an individual is often overlooked in many ways.

Would you be comfortable in a world of giants, if you had to use their huge furniture and try to adapt yourself to the resulting discomfort and difficulty? Would you make any serious attempt to keep your clothing and personal belongings in order if you couldn't reach hooks or shelves without climbing on something? Would you like it if your rights as an individual were overruled by grown-ups who rifled your desk or who failed to provide any place you could really call your own? But many children are subjected to similar handicaps by well-meaning adults who simply haven't thought of the child and his world in this light.

Ideally children should have a room of their own, from babyhood on, keyed to their needs and planned for their enjoyment.

The Baby's Room

It is a real temptation to transform the room that is waiting for baby's arrival into a bower of lace and ribbon. However, if the mother-to-be is going to do all or most of her own work soon after she gets home from the hospital, we beg her to restrain this impulse.

Rigorous standards of cleanliness, essential to baby's well-being, are much easier to maintain in an uncluttered room. But this does not mean that the baby's room must be bare and desolate. Crisp washable curtains are colorful and charming, and windows where they are hung really don't need draperies. Furniture finished with washable paint is fresh and attractive as well as easy to keep clean, while furniture in a natural wood finish is also appropriate and beautiful. If the crib is painted, the paint should have a vegetable base, because babies who are teething often bite the edge of the crib. A non-slippery floor with one or two small washable rugs is more in keeping with the general daintiness of the room than one completely carpeted, and far simpler to maintain.

With a comfortable chair for mother, and a few suitable pictures for decoration the room is complete and attractive.

A Room for Small Children

Two small children of opposite sex may share the same room until they are five or six years old, but of course each child should have his own bed. As they grow older their interests and needs are too widely divergent for peace and amity if they continue to share the same room. Two children of the same sex may occupy the same room as long as is necessary. If the room is used for both sleep and play, it should be reasonably large.

Children's play should not be continually hampered by admonitions to be careful of the furnishings. Rather, the furnishings should be of a type that can stand hard usage without getting shabby and worn too quickly.

Walls should have an attractive washable finish (pages 157–166). Many manufacturers have designed washable wall coverings especially for children's rooms. Woodwork should be washable too (page 167).

Floors should be easy to clean. A deep pile rug has no place in a child's room. Linoleum, composition tile, or felt base floor covering are all suitable and easy to keep in good condition. Washable scatter rugs may be used if desired.

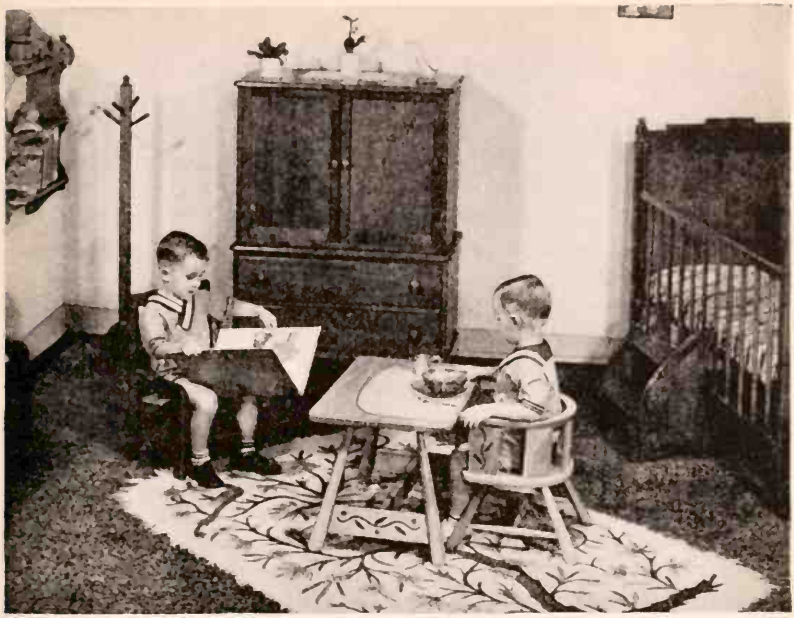
Furniture should be adapted to the growing child, and will be discussed at greater length further on in this chapter. Other furnishings, such as curtains, slip covers and any necessary accessories should be easy to launder or clean, yet gay and interesting. If a child is three and a half years old or older, he might like to choose the material for curtains, etc., from among several samples.

The whole room should be cheerful, light and airy—a place for the child to regard as his own domain, where he can be busy, comfortable and happy in surroundings that are suited to his own requirements.

Furniture That Grows

In this day of scientific wonders who is surprised by furniture that grows? Today furniture that fits the child and is adapted to his size and expanding needs is as important to his development as are the right kinds of shoes, clothes and foods. It is a part of the plan to help children to grow up into self-dependent, responsible, resourceful persons.

If you haven't seen the new type of furniture for children that is designed to grow as they grow, you'll be interested to know about it.



The chairs encourage correct posture, the table is just right in height for comfort, and the tipless, well-built stepladder helps a child to climb into his bed all by himself.

First, there are chairs that develop as the child develops. They have slanting seats and well proportioned backs to encourage correct posture. For very young children, the arms act as a protecting framework; but, as the chair is adjusted inch by inch in height to adapt its "baby features" to young independents six and seven years old, these arms "grow" into the framework. This is done by a very simple screw adjustment, made with a small screw driver or even a dime—so easy a process that it encourages parents to keep the chair adjusted to the right height for comfort. The simplicity and variety of the designs of these chairs make them fit well into any room in the house, as well as the nursery.

Another chair worth consideration is one equipped with a small training table, useful when children are learning to feed themselves, and which can be used from the time the baby sits up until he is five or six years old. Many mothers prefer this to a high chair for the baby's first chair. It deserves special consideraion if a child is inclined to be timid

in a high chair, for it is low, sturdy and comfortable. When sitting in it the child has his feet flat on the floor, so there is no reason for fear. The chair is very steady and with its well-spread legs it cannot be overturned easily. It locks firmly to the table when the two are used together.

Chests and dressing tables low at first, so that even a very small child may get out and put back his own clothing, may be heightened by either a low or high foundation section. Thus they can "grow" into a chest-on-chest of just the right height, or a dressing table with a substantial base compartment to give added inches. A mirror placed over a small desk makes it a dressing table with good drawer space down the side, very suitable for a little child's room. Later on it may be converted into a fairly sizeable desk which can serve faithfully for many years.

The attention paid to the beds in this furniture development is especially noteworthy. The crib with high sides is a well-constructed bed and safe for two good reasons: First, because the sides are high enough to keep even the investigative child carefully corralled, and all the adjustments for lowering or raising the sides are well out of reach of prying fingers. Second, because the mattress and springs are so constructed that the bed does not sag and allow the child to get into uncomfortable, unhealthy positions.

The junior beds have low side rails for safety yet look very grown up. The rails can be removed easily when the child gets beyond the age when they are needed. Junior beds may be converted to full-size beds later on by replacing short side rails with full-length ones which are available from the manufacturer. This adaptability offers a distinct advantage over discarding the whole bed, even though standard springs and mattresses may need to be provided for the lengthened beds.

A junior bed can be converted into a double decker by placing one twin bed on top of another. This combination intrigues some children very much. The fact that the design of the bed makes it possible for two to be used as twin beds or a double decker gives it added usefulness. A sturdy ladder is available with the double decker.

In the photograph on page 51 you will notice a stepladder. It is a tipless, well-built step-stool on which a child can climb, all by himself, into the junior bed with side boards. It is extremely useful in the bathroom, for with it he may climb up to the washstand or even on the toilet all by himself and with no danger of tipping.

A firm pressed wood base which is raised slightly from the floor is a desirable feature in a play pen, particularly where houses are draughty. Modern pens not only fold for easy storage, but have rollers which make them easy to transport from one room to another. So care-

fully calculated are the spacings of the spindles that there is no danger whatever of the baby's head getting caught between them.

Careful thought has been given the construction of all these pieces of furniture in so far as sturdiness, smoothness, easy care and comfortable use are concerned. Handles are designed so that children may both reach and hold them comfortably. All of the finishes are durable and—what is even more important—safe. There are no sharp corners. Drawers are checked so that they cannot be pulled out to drop on a child as he puts his possessions away or gets them out.

The fact that the cribs are rattle-proof will warrant the appreciation of many a parent. Edges are smooth and all metal fittings rust-proof.

Furniture that has been developed with scientific care, that grows and adjusts to your child's increasing powers and needs, is becoming indispensable in homes really concerned about well-developed, responsible young people.

If it is not possible to invest in several pieces of this furniture, necessary adjustments in height can be made by some one in the family who is handy with tools. Tables and chairs can be raised with gliders, casters or lifts, and chests or bookshelves made higher by setting them on a simply constructed solid foundation.

Children Like Company

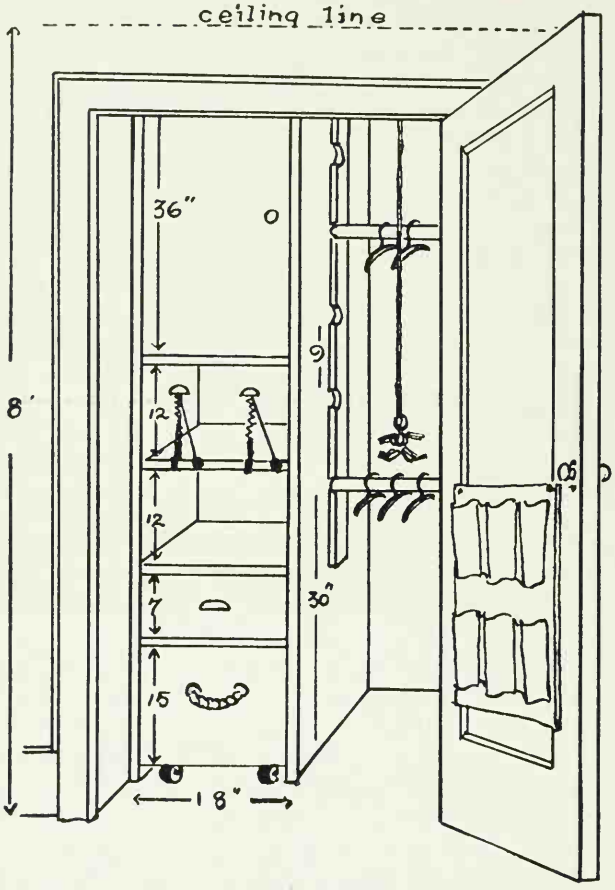
Children often like to join the rest of the family instead of staying in their own room by themselves. Because cooperative work and play are all-important, definite provision should be made for child centers in family living rooms. A table, chairs, and shelves for toys and games can be assembled inexpensively, particularly if unfinished furniture is chosen, and finished at home (pages 538–542).

Storage

A well-planned closet can take care of toys as well as clothes, and will help instill habits of neatness, selection and self-reliance.

The fixtures should be scaled to the child's height, but made flexible, if possible, so that they can be used throughout his growing years. In the closet shown in the drawing on page 54, clothes poles are made adjustable by means of two thin strips of wood with circular notches about 9″ apart, and screwed to the side walls. As birthdays come and go rods may be adjusted easily to accommodate additional inches. The lowest notches are about 30″ from the floor so that even a small child may choose what to wear. You can govern this somewhat by hanging his dress-up clothes on the higher rod.

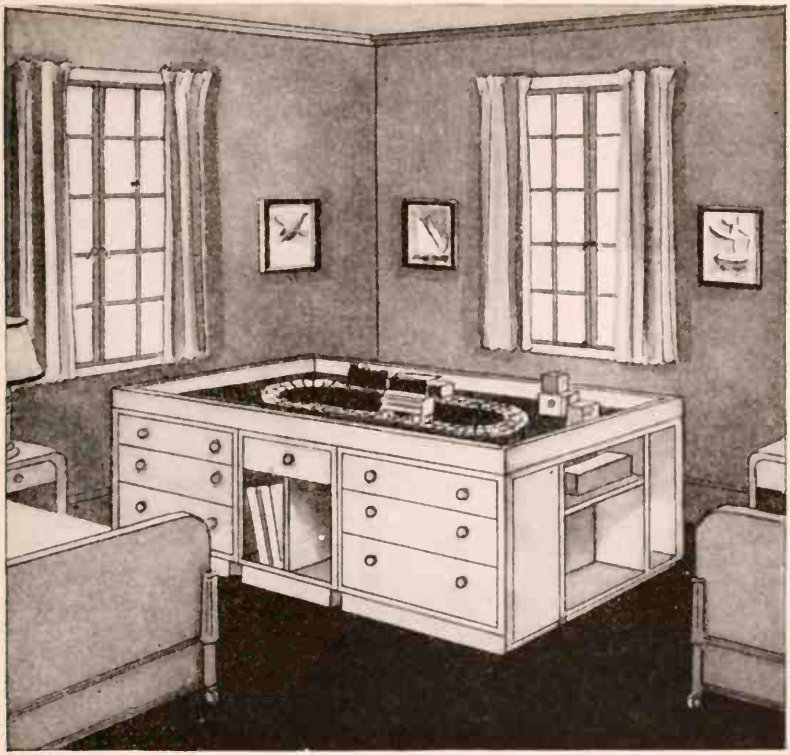
Doubling up on hanging space gives you room for a storage unit, like the one illustrated below. Reserve the upper drawer for sweaters and other stretchy garments that get out of shape on hangers. Your child won't mind putting his knitted things away in their own drawer;



In this closet, described on pages 53–55, clothes poles are adjustable so that they can accommodate additional inches as the child grows.

and he'll even like hanging up his hats because they belong on the flexible hat stands above, which are so fascinating to operate.

The bottom drawer, which is really a storage box, is 15″ deep, mounted on casters, and easily pulled out into the room by its rope



Designed by Gilbert Rohde

This ingenious piece of furniture provides plenty of play space as well as storage space, while occupying a relatively small floor area.

handle. Place favorite books within easy reach on top of the drawers, and he'll feel that the closet is really his kingdom.

The little cupboard overhead is intended for out-of-season coats. Here they hang, always in press, and ready for change in the weather.

Shoes are perhaps most easily managed by small folk in an ample shoe bag hung low on the door. And a few low hooks are useful, also.

Toys may be stored all by themselves on shelves that are easy for small children to reach. "Pick-up-and-put-away" is not easily taught to children if places to put things are small or scarce.

Dolls and small toys heaped on a toy closet floor are often a problem. If no regular provisions can be made, there are several excellent "make-shifts" which cost little except in ingenuity. One solution is a shoe-bag

arrangement tacked low on the closet door within easy reach of the child. Attach three rows of deep pockets to a piece of cretonne 20 inches by 48 inches. Make three pockets 8 inches by 12 inches for the top and bottom row, to hold dolls and stuffed animals. Make two large pockets 12 inches square for the middle row. These pockets provide plenty of room for extra doll dresses or larger toys.

Sturdy wooden ginger-ale boxes can be converted into excellent storage space for toys. The boxes, which you can get at the grocer's, are firmly made, metal-stripped and equipped with convenient hand-holds at either end. Sandpaper and steel wool give them a safe smooth surface; bright enamel paint makes them fit attractively into the nursery color scheme.

Piled two or three high in a row along the nursery wall, these boxes become a roomy useful cupboard where even the smallest children can keep their toys. Horizontal plywood shelves resting on four screws can be added to some of the boxes, to hold flat nursery books and small toys.

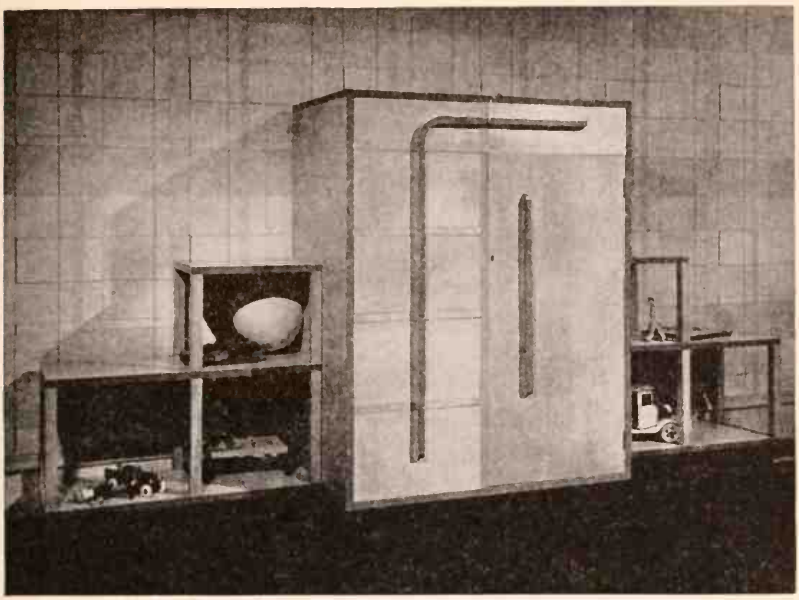
When the nursery age is past, these boxes can be mounted individually on non-scratching casters to provide a movable bin for large blocks, construction toys, trains and tracks. The smooth hand-holds provide an easy grip and the bins roll freely, making it easy for older children to get their toys or to put them away. Casters placed only at one end, with wooden blocks at the other, assure steadiness while the box is in use.

More of these boxes, left over from nursery days, find ready use as back-yard building material and easily portable containers for sand and other outdoor toys.

Big outdoor playthings are frequently the most difficult to stow away neatly. One solution is to make a door in the coping of lattice work under the back stoop. Wagons or tricycles can then be rolled inside.

A clutter of roller skates, bats and balls on the back porch is both hazardous and unsightly. A simple remedy is to place a wide shallow box just inside the back cellar window. The box runs the length of the window and is fastened with brackets to the cellar wall. It can be reached easily from outside, by even the smallest child, merely by pushing open the window sash. Jump ropes, balls, skates, bats and other small play paraphernalia are put away there just before the children come in from outdoors.

Books present another storage problem in a child's room. Boys and girls who are fortunate enough to have books of their own should also have the right kind of shelves to keep them on, yet a child's room is rarely equipped with broad, deep bookshelves. Here are two kinds which can be made at home for very little money.



Designed by Joseph Aronson, Inc.

This modern cabinet is scaled to a young child's height and adapted to his needs.

For a child's large picture books, shelves need to be deep. It is best to make the lowest shelf the tallest one, so that later on it can accommodate reference books. An ideal arrangement is to make the shelves 12 inches from front to back in this bookcase, with a lower shelf high enough for a 15-inch book when it is standing up. At one end, place two upright divisions 6 inches apart to supply leaning posts for some of the thinnest books. The shelf above this one should be 12 inches high to hold the smaller books.

At the end, opposite the leaning posts, divide this upper shelf into two shelves 6 inches deep and 14 inches wide. These hold scrapbooks, a supply of paper, blunt scissors, paste and pencils, all of which should be part of any juvenile library.

Above these shelves a backboard 12 inches high can be hung. If you wish, the three exposed edges of this backboard can be finished with moulding. Six inches from its top at each end place a screw eye. When small round white elastic has been stretched between these

eyes, there is a place for an open book, leaned against the backboard, kept open by the elastic. The book won't be stepped on, its back won't be broken. One or several books may be placed there at the same time for the pure pleasure of their young owner. Or the pictures every child cuts out and keeps can be pasted against the backboard or simply secured behind the elastic.

Paint the bookcases black or a dark blue or green outside, so that scuff marks won't show, and use a bright color inside. Light green, a sunny yellow or a light blue will make a good background for the books. These shelves can be any length you wish, depending on the room and the number of books (see picture, page 59).

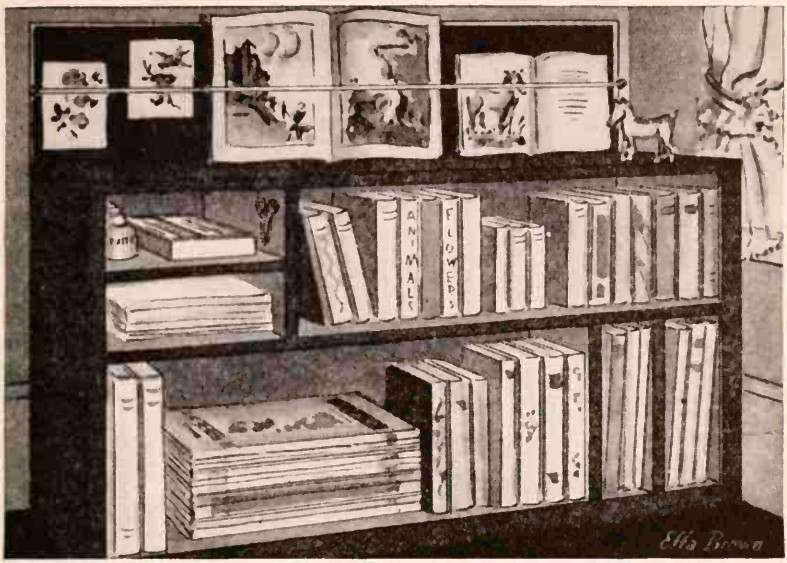
For the mother who must also be carpenter and does not know how to build bookshelves, there is still another solution—also a very inexpensive one. Stand three orange crates on end, fasten them together, cover with oilcloth. Use dark oilcloth on the outside, and a light cheerful color inside. Glue or tack the oilcloth everywhere except at the front edges. All the front edges can be studded with rows of colored thumbtacks or brass-headed nails.

On the top, fasten shelf brackets at each end. These may be enamelled to match the shelves or left as they are. Stretch a double length of the round elastic across the back, fastening it at the center of the bracket. Still another single piece should go across the top. This means that a book can be supported by slipping it between the double length, and the book can lean against the upper one. Find bright-colored boxes to hold scissors, paste and pencils, or paint cigar boxes to hold these small articles.

A bulletin board of cork or plaster board, hung low enough to be within easy reach, provides a place where children can display pictures they draw or cut out or work they bring home from school, and is a never failing center of interest.

Bookshelves in a child's room do more than house his books and pictures. They keep youngsters from growing up with the idea that any home can be lived in happily without books or a place to put them.

When there are two or more children whose possessions are kept in the same room, squabbles can be prevented by identifying the storage space belonging to each child, with a special mark. One nursery school we know uses decalcomanias for this purpose, with very attractive results—a flower for Mary, an animal for John. Another school paints the inside of each "cubby" a different color, because a child identifies a color as his own even more readily than a picture. This idea is easy to follow at home and makes the children's room colorful and bright. This same system can be used to train a young child in orderly habits



Drawing by Effa Brown

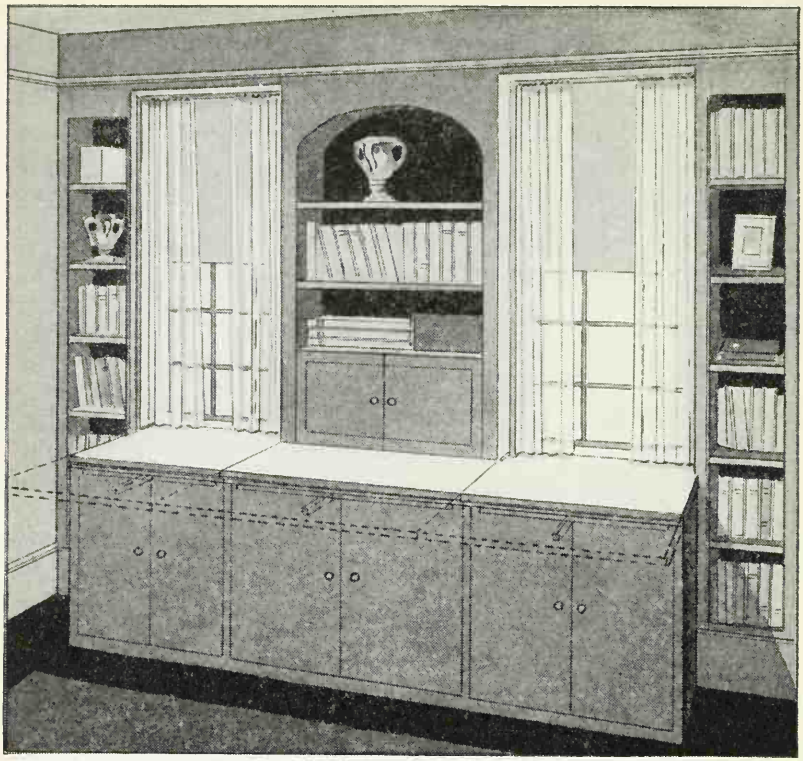
A bookcase for young children, described on page 57.

by marking storage space with a picture of the article which belongs there. This works out nicely in the case of bureau drawers. For example, a picture of gloves pasted in the space alloted to gloves, a picture of socks in their allotted space, etc., will guide the child in putting away his own clothing and establish good habits of neatness. But don't expect too much of them. Little children don't put their own things away readily, so, at the end of a long day, be ready to offer generous help.

A Room for the Adolescent Child

A child of adolescent age needs, more than ever, a room of his own, where collections and hobbies can have free rein. If provision is made for them, these hobbies need not lead to disorder or confusion.

The cupboard and work space shown in the drawing on page 60 solved the problem of how to make two teen-age boys share one room and like it. A long shelf built in three sections forms the top of three closed-in cupboards, which provide ample storage space for all kinds of paraphernalia, even to baseball bats and tennis rackets. The shelf



Drawing by Effa Brown

This cupboard work-space arrangement for teen-age boys is described on pages 59–60.

is double, so that the upper part folds back, and forms three separate tables. Above the middle cabinet is a set of closed-in pigeonholes for writing materials, letters and papers. Open bookshelves are built above the pigeonholes and on either side of the cupboards.

Children of this age resent prying, but appreciate real interest. A certain amount of privacy is their right, and desks and bureau drawers should be their own private property. If, up to this age, they have had education in orderliness, good habits should be firmly established by now, and they can be depended upon to keep storage space in good condition. Diaries, scrapbooks, correspondence, collections, should not be subjected to inspection except by invitation. Doubtless such invitations will be freely extended to understanding parents who have built up a feeling of confidence in their children.

The furnishings and decorations of their own rooms take on a new interest for children in their early teens. No boy wants a "sissy" room all done up in frilly curtains and furbelows. But girls take a real delight in such fripperies. And children of either sex will take better care of a room that they have had a share in planning.

Lighting

Good lighting is essential for work and play. You will find a full discussion of this subject on pages 503–516.

CHAPTER VII

SPECIAL STORAGE PROBLEMS

Storage space that is both adequate and convenient contributes a great deal to comfortable living. Energy is saved and order is preserved in a house or apartment that is provided with plenty of well-planned closet space. A wholesome respect for the personal rights of others is the natural result of having a place to keep personal possessions. A feeling for order and a sense of responsibility in keeping clothes and accessories in good condition are developed also.

Cluttered rooms, where toys, sports equipment, magazines, sewing paraphernalia, and odd pieces of wearing apparel are tumbled about in confusion, are no incentive to family peace. Time is wasted in hunting for misplaced articles, and the wear and tear on nerves cannot be discounted.

The size of the family and the ages, needs and interests of the whole group should be taken into consideration when storage space is planned or redesigned.

It is easier, of course, to do this planning when a house is still in the blue-print stage, or even sooner. Cost is a factor in planning storage space for a new house. One large closet is less expensive than several small ones, and if such a closet is carefully planned and subdivided it can be made convenient. Attic space and the basement, if it is dry, provide additional storage space.

A thoughtful survey of a house already in existence can lead to many ideas for additional or more convenient storage space. Spaces under the stairs, in corners, above doors, in the basement, attic or garage can be utilized to good advantage. Closets can be made much more convenient through the addition of shelves, racks, drawers and partitions, at very little expense.

Labels and lists do away with opening several boxes, chests or trunks to locate a needed article. Periodic stock-taking and clearing out prevent accumulations of articles that are no longer needed or wanted.

In general, all articles in frequent use should be stored near the place where they are used and where they are easily accessible without reaching or stooping. It should not be necessary to grope behind

other articles to find the one that is wanted. Storage units should be planned in relation to the size and shape of the articles to be stored in order to avoid waste space.

Closets can be beautiful as well as useful. The art of closet decoration has taken great strides during the past few years, and many stores and specialty shops have a department devoted to closet fittings and decorations. Some even offer the services of a "closeteer" who is an expert in planning closet arrangements and decorations! There are gadgets and decorative materials within the range of almost every budget. Whether you shop in the "five and ten" or in an exclusive decorating establishment, you can find matching closet accessories which make you proud to open the door of every closet in your home. However, no gadgets can compensate for inadequate space.

Linen Storage

Almost every new house or modern apartment is equipped with a linen closet, but very often the size and depth of the shelves bear no relation whatever to the size and shape of the linens themselves. Furthermore, one unit for linen storage is seldom adequate and unless it is centrally located, many steps are necessary to take out or put away all the different articles that are used in various rooms. Even with careful planning overcrowding is almost unavoidable.

Ideally, linen storage should be provided in several locations. Table linens should be kept in the dining room or close by; towels, wash cloths and bathmats belong in the bathroom. Dish towels, dishcloths and cloths for washing up should be kept in the kitchen; bed linen and bedding are convenient to get at if they are kept in a hall that is adjacent to the bedrooms.

If decentralized linen storage of this kind cannot be obtained, two linen closets can be adapted conveniently in relation to their use. The bedroom and bathroom linen can be stored in a closet in a hall which connects with these rooms, and the dining-room and kitchen linens in a closet near both rooms.

If you are designing a linen closet, you should know the average dimensions of folded linens* in order to plan shelves that are convenient in size and depth. The dimensions for folded linens are given on the next page.

A drop-leaf or pull-out shelf for sorting is a convenience that deserves consideration. Shallow, tray-like drawers for table mats and doilies keep these linens free of creases and wrinkles. Deep shelves at the top to accommodate drop-front boxes in which blankets, quilts and seldom

**Architectural Record.*

Dimensions for Folded Linens

8–10 large bath towels 16–20 medium bath towels	1′ 10″ to 2′ x 9″ to 12″ x 1′
3 pillows,	2′ to 2′ 2″ x 1′ 4″ to 1′ 6″ x 1′
10–12 sheets or 24–36 pillow cases	2′ x 10″ to 12″ x 1′
12–18 small bath towels or 18–24 face towels	9″ to 12″ x 7″ to 9″ x 1′
3–4 heavy blankets or 4–6 light blankets	2′ to 2′ 4″ x 1′ 4″ to 1′ 8″ x 1′

used linens are stored should be provided. (For moth-preventive storage of blankets and quilts see page 376.)

If the outer edge of each shelf is labelled it is easy to keep order and to locate the needed articles at a glance. At least one manufacturer of sheets and pillowcases has attached permanent tab labels indicating the size of each so that it is not necessary to take down and unfold several sheets in order to find one of correct size. Labels that can be ironed on instead of sewed on are a convenience.

It is wise to keep a permanent record of linen purchases. List the date of purchase and the brand name for each item and, finally, next to it, the date of discard. In this way, you can keep track of "best buys" as a guide to future buying.

Clothes Closets

Under ideal conditions each member of the family should have a clothes closet of his own, adequate in size and adapted to individual needs and requirements. In addition, a hall closet for outer garments can be shared by the whole family. If too few closets have been built in, it is possible to build one of fiber board, provided there is convenient wall space available. Portable closets, made of various materials, are available in department stores and can be both attractive and convenient.

Clothes closets should have good ventilation. A window in the closet provides the best ventilation. If a window is not possible, there should be slits in the door. If garments are hung a few inches apart, air will circulate between them to good advantage.

Good lighting is essential. If there is a window in the closet, or if the

Left: A closet designed for a feminine wardrobe.
Center: Shallow shelves are best for linen storage.
Right: A closet designed for a masculine wardrobe.

closet is shallow, enough daylight is admitted. Artificial light should be provided by a shaded bulb in the closet. If possible the light should switch off automatically when the door is closed.

Walls and floors should have a washable finish (pages 143–167). The floor of a closet should never be used for storage.

Garment bags, hat boxes and drop-front boxes protect seldom-used clothing from dust. If these are made of transparent material the contents are visible, which is a decided advantage. Garment bags are made in various lengths, intended for blouses, skirts, fur scarves and daytime or evening dresses. Shoulder covers made of cellophane or transparent cloth also help to keep garments from getting dusty.

Auxiliary equipment in the closet makes for good order. Shoes can be kept on a slanting shelf equipped with a heel-rest, in a shoe cabinet or in a bag with pockets, as preferred. Hat stands, tie racks, belt racks, trouser racks and shallow drawers for accessories are all convenient and make these articles of clothing readily accessible.

Hangers are made in a variety of materials ranging in cost from a few pennies to several dollars, and can be selected to match or harmonize with the other closet accessories.

A clothes closet to be used by one person should be *at least* 2′ 2″ deep and 3′ long. A better size is 3′ deep and 5′ long. Shallow closets with double doors are becoming increasingly popular. The rod for hangers should be placed from 5′ 6″ to 6′ 1″ above the floor and 12″ out from the wall. About 3″ of the length of the rod should be allowed for 1 garment on a hanger. Space should be provided for storage of garments not in use as well as for those which are being worn currently.

In order to utilize space effectively, it is advisable to know how much room to allow for specific fittings and garments:

Hanger—16″ to 20″ wide (allow an additional 2″ to 3″ for space occupied by the garment on the hanger)

Garment bag—63″ to 69″ from tip of hook to bottom of bag; 23″ wide

Women's dresses—4′ 6″ to 5′ 6″ clearance from floor

Man's top coat—4′ to 5′ clearance from floor

Man's suit (trousers and coat on 1 hanger)—3′ to 3′ 6″ clearance from floor

Woman's suit (coat and skirt on 1 hanger)—3′ 6″ to 4′ 6″ clearance from floor

Man's hat—12″ x 12″ x 8″

Woman's hat—12″ x 14″ x 12″

There should be a clearance of about 3 inches between the clothes and rod and the first shelf above it. The next shelf should be 10 to 12 inches above the first. Any shelf higher than 72 inches above room floor is difficult to reach and should be used for "dead" storage.

Children's Closets are discussed on page 53.

Bureau Drawers

Often the most orderly person backslides when it comes to bureau drawers. Undoubtedly this can be blamed partially on the design of the drawers, because functional design has not yet made an impression in this field. Most bureau drawers are simply yawning caverns in which articles are flung willy nilly.

It is possible to improve the situation by installing partitions and by using attractive boxes for smaller articles and accessories. Unless these boxes are transparent they should be neatly labelled. Boxes without lids are more convenient if the articles kept in them are in constant or frequent use. Transparent envelope cases for lingerie, gloves and handkerchiefs keep these articles spotless and unmussed. A lowly, partitioned knife box from the "dime store" can be painted and made attractive enough to be used for orderly storage of the assorted trinkets that usually cause confusion in a drawer.

Chests of drawers for closets have been designed by experts to store all types of wearing apparel without any wasted space.

Paper for lining bureau drawers is available in several widths and in charming pastel colors or white. Certain varieties are treated so that they can be cleaned with a damp cloth. Other washable materials especially intended for lining bureau drawers are to be found in a variety of patterns and colors.

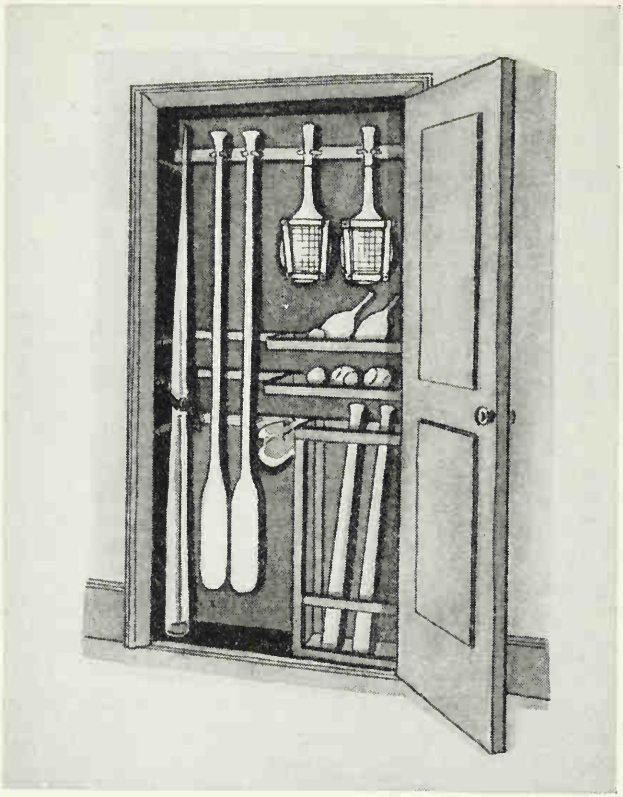
Bureau drawers are not satisfactory for storing articles against moth damage (page 376).

Sports Equipment

Every spring women who have active, athletic families face the problem of finding safe storage space for winter's skates and skis. And every fall, canoe paddles, fishing tackle, ball bats and tennis racquets must be put away.

Although these are the family's most cherished possessions they are often tucked away in the backs of closets to tangle up with clothes; or put in the garage where almost anything may happen to them and frequently does.

Unless you have a special closet for sports equipment, a shallow built-in cupboard is an excellent solution to his problem, or, if you are so



Drawing by Effa Brown

This convenient closet for storing sports equipment is described on pages 67–69.

fortunate as to have an unused door between two rooms in your house, you have the makings of a permanent and accessible storage closet for much of your sports equipment, in and out of season.

To build this closet, which is illustrated above, close up one side by removing the door frame and inserting a piece of wall board flush with the plaster. Fill in the cracks carefully and paper or paint to match the rest of the room.

Leave the door and frame intact on the other side (of course the

door swings out) and you will have acquired a shallow closet. Although it is only four to six inches deep, with careful planning it will serve your purpose nicely.

Divide the wall space according to the things you have to store. Then attach narrow strips of wood to the wall board wherever you will need to drive nails or screws. Or by resting these strips on little wooden blocks fastened to the door frame, the strips need only to be tacked to the wall board to be fully secure.

Reserve one side, up and down, for long articles such as skis, canoe paddles and fishing rods. For the paddles fasten clamp holders—the flexible kind that you use for your brooms and mops—on the aforementioned strip of wood. Skis and fishing tackle may be held in place with a strap arrangement.

In the lower half of the remaining space make a frame to hold ball bats, and above it hang little boxed shelves for balls—tennis, baseball and ping-pong, as well as ping-pong paddles. Hang tennis rackets above in some more of the flexible clamp-type holders.

Perhaps you will have to make some provisions for skates, or hockey sticks and shin guards. But whatever your problem, it's a matter of dividing up the space you have so that there is a proper place for everything. Then chances are that everything will stay in its proper place.

Garage Space

Racks for overhead storage in a garage accommodate screens, awnings, folding chairs and other awkward articles which are used only during certain seasons. The space beneath the rack can be utilized for storage of garden tools.

Rustic Garden Furniture

Unfortunately rustic furniture is attractive to woodboring insects, and must be protected against their ravages during the season of the year when it is not in use. First of all it should be stored in a dry, unheated place, such as a shed or attic.

When the furniture is stored the legs may be painted with creosote and the furniture wrapped in canvas or tar paper and placed on a sheet of galvanized iron or tin which is bent upward around the edges for a distance of about 6 inches. A coat of varnish applied to the furniture each season is a protection against both weather damage and insect damage, while it is in use.

Miscellaneous Problems

1. *Extra storage space in the bathroom*

A good spot for an overhead cupboard is in the space above a recessed tub in the bathroom. As this recess is usually five to six feet long, with about twelve inches between shower curtain rod and the ceiling, you can install a very commodious cupboard. This will care nicely for reserve supplies of soap, tissue and drugs.

If you have no shower or one which is rarely used, a cabinet built of ordinary lumber will be satisfactory. But the excessive steam from a shower may cause warping of plain wood. Therefore it is best to make the cabinets over a shower of plywood which has been put together with waterproof glue. Metal cabinets, bought in ready-fabricated units, will not warp and are an excellent way to provide cabinet space in bathrooms that are very steamy.

2. *Games, playing cards, etc.*

Shallow, enclosed shelves may be built in the living room or play room to keep games and cards in order and out of sight when not in use.

3. *Phonograph records*

Expensive, precious records should be kept in albums or specially designed cabinets, safe from harm. Currently popular dance records that are in constant demand may be kept in open racks, but their paper jackets should not be thrown away. Unless these jackets are put on again after the records are used, dust or careless handling may scratch the records severely.

4. *Sheet music*

Portfolios keep sheet music in good condition, and if the portfolios are labelled it is always easy to find the music you want.

CHAPTER VIII

MONEY MANAGEMENT

For years budget experts constructed tight little percentage patterns, based on various income levels, and told us that we must somehow squeeze our budget into one of them. The conscientious among us tried, and tried hard, to make the pattern fit, but as soon as one column of figures was pushed into place, another column bulged out and spoiled everything. Family friction increased whenever the budget failed to balance, and nerves grew tense to the breaking point during fruitless searches for a missing fifty cents.

Recent years have clarified the situation somewhat. Even the experts agree that a pattern is only a guide and that every budget is an individual problem to be worked out by the family. But only a very few of them have been wise enough to realize that most "standard" budgets are worked out backward, starting with the necessities of shelter, operating expenses, food and clothing and ending with a "savings" account. But the wise ones have realized that money must be spent before it is any good to us. All that isn't spent for present needs is set aside for future spending. And so they start with a future "spending account" that makes budgeting fun rather than hard work. The stern budgeteers of the past told you that you must "save" for death, sickness, accidents, hard times and other catastrophes that might befall you, denying by indirection that virtue is its own reward. The cheerful budgeteers of today advise you to put aside money to be spent later on for some definite thing that you want and need, and to build the rest of the budget, including a "back log" or "emergency" fund, around this sum. A budget of this sort can be a road map marking the way to your heart's desire.

The reward can be big or little, ranging from a new set of dishes to a car or a house. You may decide to make a five-year plan or a one-month plan, depending on the goal. The important thing is that a reward is in view. This reward should be of interest to the whole family, of course, and a council should be called to decide on something that the majority are eager to have.

Get the family together and list everything that everybody wants: the clothing items each one needs; new equipment for kitchen and

laundry and tools for work bench or garden or garage; household furnishings for living room, dining room and bedroom, whether repair of old or purchase of new; a rug, a picture or a musical instrument; and then personal needs—for games at home and sports outside, for recreation, for arts and crafts, for reading, music, plays and movies. Of high importance are books, magazines and lectures that will aid father in his vocation and mother in her homemaking. When the lists are made, discuss them in a breezy family round table and choose the most important items to try to secure month by month for next year. Many will have to be deferred, but why miss the thrill of thinking that it would be nice to have this or that sometime; and that we *will* have it too! Such goals are good for family ambition. Some things desired can be made at home; free books and magazines are awaiting us at libraries, free lectures and music are available for the asking or the arranging of a committee to provide them which we might help establish. Once the goal is established, set the date for achievement, and plan to put aside a certain sum each week or month until the reward is won.

Now you are ready to construct the rest of your spending plan, in order to find the ways and means to save the reward fund. You may find so many small "leaks" after a month or so of budgeting that the reward fund will accumulate more rapidly than you had hoped.

The next step is to set down the amount of all *fixed expenses,* which, for the time being at least, cannot be altered. These expenses include rent, or interest on a mortgage, taxes, commutation to business, payments on indebtedness, contributions toward the support of relatives, insurance payments of all kinds, church pledges, club or organization dues, etc.

If the total amount spent for fixed expenses makes it impossible to save for the reward fund, look carefully for ways in which these expenses can be cut.

Once the budget is set up, it is wise to deposit 1/12 the total of fixed expenses each month or 1/52 each week, either in the general checking account, a special checking account, or a special savings account, so that the money will be on hand when it is needed. It is also helpful to list the dates on which any commitments are due.

Flexible expenses come up for consideration next. These are more fun to work with because if extravagances show up, they can be dealt with at once. Food, clothing, all expenses connected with running the house, and the cost of items usually listed under "advancement" or "development" belong in columns under this main heading.

If the income is small, food costs loom large in proportion. Some-

Photograph by H. Armstrong Roberts

A budget based on the reward system can be a road map to your heart's desire.

times when the family is large the entire budget must be built around this item. Even when the family is small the cost of food is often disproportionate. Time spent in planning usually results in money saved. If menus are planned and written down several days ahead, marketing will be easier and less costly. You will find it possible to take advantage of "week-end specials," to plan for left-overs, and to provide for more variety in the meals you serve to your family. Cooking ability is a big help in cutting food costs, because inexpensive foods, skillfully prepared, often top higher-priced foods in flavor, health value and "appetite appeal."

It helps also occasionally to keep a detailed food record for a couple of weeks or a month with separate totals for cost of cereal foods; fruits and vegetables; meats, fish and eggs; milk and cheese; and in a final class, fats, sugar and miscellaneous items. On a modest income, in order to get a balanced diet, not far from 1/5 of the food money should go for each of these five groups, namely: cereal foods; fruits and vegetables; meats, fish and eggs; milk and cheese; and fats, sugars and miscellaneous. A simple food check for a family with children

is to spend as much for milk as for fruits and vegetables; and to spend as much for milk as for meats. There is also the fundamental milk rule to use a quart a day for children and a pint a day for adults. Another useful food check is of one's total food cost, which will vary from about 25 cents per person per day to 50 cents per person per day; to do this, find the monthly food bill and divide it by 30 or 31 for the daily food cost and this again by the number of persons in the family. If in a family with children the daily food cost per person is 25 cents or thereabouts, one cannot do much better than that at a minimum cost; 40 cents per person per day should represent a moderate cost for food; and 50 cents per person per day a liberal cost.

What will clothing cost? In a wage-earner's family, the wife's clothing may cost about $70; the husband's nearer $100, and the children's from $25 to $60 each; but older-teen and working young people's, more of course than their parents'. On a $2400 family income the mother's and the father's clothing may each be about $100, hers perhaps a little more than his; on a $3600 income they will each have $150 or more and hers will be definitely the larger. Yet every wife knows the importance of her husband's appearance being suitable to his vocational position; and every mother knows that children involve sacrifice of parental outlays in dress or other items.

However, many factors affect the amount that must be spent for clothing—climate, activities, interests and social or business obligations, all are involved. A list of a year's needs should be made for each member of the family, and the items on hand checked off. It is often necessary to look ahead two or three years in order to plan wisely for a major purchase such as a winter coat. An estimate of the cost of items to be purchased can then be made. Actual expenditures depend upon your ability to compare quality and price, to watch for sales at reliable stores, to read labels and to follow directions for care. If you know the best methods for laundering (pages 255–305), mending and pressing (page 279), you can prolong the useful life of clothes.

Now get your bills together and see how much you pay for gas, electricity, fuel, ice, water, telephone, laundry, garbage collection, household help, repairs, replacements, household supplies and home furnishings. Are you amazed at the present cost of running your house? Which items seem too high? Can you cut them? Don't sacrifice good lighting, but don't keep lights on in empty rooms. Learn to operate your kitchen range and electrical appliances economically. Keep track of telephone calls so that you won't exceed the limit unless absolutely necessary. Operate your heating plant efficiently (pages 413–445). Buy furnishings with an eye to wearing qualities and clean-

ability. Don't waste water by letting faucets drip. As you see, there are many ways to cut operating costs if you are determined to do so.

Now for another main heading of our budget—advancement or development. Under this heading come health, recreation, pocket money, personal care, automobile expenses, gifts, contributions and education. Under health we list medical and dental care and drugs. Regular visits to your physician and dentist are cheaper than emergency measures necessitated by neglect. The Chinese pay their doctors to keep them well, and this seems to be the best idea of all. Hospital insurance, costing two to three pennies a day, is a wise investment for every family, even though they may never need it. And meeting bills caused by illness, through membership in an insurance association, is a method which is now becoming available.

Recreation almost deserves to be listed under health, so essential is it to well-being and happiness. It is not at all necessary to be extravagant in order to have fun, but neither is it wise to be stingy to the point of starvation. Magazines, newspapers, books and circulating-library fees all come under the head of education, as do fees for professional associations, school expenses, etc.

Another column of your tentative budget lists savings and investments. Figures for payments on property (exclusive of interest), annuities, endowment policies, life insurance, stocks and bonds, deposits in the savings bank and your reward fund are entered in this column.

Some families whose incomes boast a small surplus, or who can "manage" to reserve a few dollars over and above expenses, like to build up a separate bank account as an emergency reserve or "balance wheel." This account should never be drawn upon for minor emergencies or to make up deficits. Authorities recommend that $500–$1000 be built up and maintained in this account.

One dollar a week seems a minimum amount to save, and as income increases one should save up to one dollar in every ten dollars earned or more; these savings should go part into life insurance and part into the "balance wheel" account. How much life insurance? For a family of two, enough insurance to pay bills in case of the husband's death, and to provide a temporary income for the wife—say a $5000 ordinary life policy type costing $80–$100 a year. When a child is expected and for every additional dependent in the family another policy should be taken out in temporary-term life insurance of $1000 to $5000 or more, costing only $10 a year for $1000, and carried until the child reaches majority. Most teachers look forward to

[*Continued on page 78*]

Month of_____

Income

Date	Source	Amt.
	Total	

Payment on Debts

Date	Items	Amt.
	Total	

Savings

Date	Items	Amt.
	Reward Fund	
	Annuity or Endowment	
	Life Insurance	
	Mortgage Principal	
	Investments	
	Bank Deposits	
	Other	
	Total	

Shelter

Date	Items	Amt.
	Rent or Mortgage Interest	
	Taxes	
	Insurance	
	Improvements	
	Repairs	
	Transportation to Business	
	Other	
	Total	

Taxes

Date	Items	Amt.
	Income	
	State	
	Federal	
	Other (Except Auto and Real Estate)	
	Total	

Operating Expenses

Date	Items	Amt.
	Electricity	
	Gas	
	Fuel	
	Telephone	
	Garbage Collection	
	Water	
	Ice	
	Service	
	Repairs	
	Furnishings	
	Household Supplies	
	Laundry	
	Other	
	Total	

Special Expenses

Date	Items	Amt.
	Total	

Food

Date	Items	Amt.
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
	Total	

Suggested

19____

Clothing

New

Date	Items	Amt.	
	Total		

Clothing Upkeep

Date	Items	Amt.	
	Total		

General

Automobile

Date	Items	Amt.	
	Total		

Health

Date	Items	Amt.	
	Total		

Advancement

Date	Items	Amt.	
	Total		

Summary

	Monthly Total	
Shelter		
Operating Expenses		
Taxes		
Special Expenses		
Food		
Clothing		
New		
Upkeep		
General		
Automobile		
Health		
Advancement		
Payment on Debts		
Total Expense		
Cash on Hand (first of this month)		
Income		
Total		
Deduct Total Expense		
Balance		
Deduct Savings		
Balance or Cash on Hand		

Comments

Budget Form

[*Continued from page 75*]

a pension, and are depositing annually 5 per cent of salary for it; through Social Security legislation, most workers anticipate old-age pensions; any family that does not have this old-age protection should devote 5 per cent or more of income to an old-age annuity secured from a life insurance company. Families that are buying their life insurance by weekly payments to a collector should transfer to a plan payable every three months, or once a year, at the company's office, thus increasing their insurance by half as much again at the same annual cost. In a few states it is possible to buy life insurance cheaply through savings banks. This type of insurance should be made legal in all states.

How are you going to keep your record? Choose a system that seems easiest to you. Insurance companies, finance companies, savings banks, state schools of home economics, and the home economics extension services all offer such systems. You will even find good budget record books in the five-and-ten-cent stores. On pages 76–77 is a record plan which can be entered in a large notebook.

Who keeps the budget? Some authorities say the man of the house should accept this responsibility. Others believe that the homemaker, who spends 85 cents out of every dollar, is the logical person to record expenditures. We believe that the choice should be made by the family, and that the one who takes most naturally to figures and records should keep the budget.

Don't make the mistake of imposing drastic regulations on every one in the family. It isn't reasonable to watch every penny with a feverish eye, and it certainly takes all the joy out of life. Each person should have pocket money, the amount gauged according to age and needs. Only the lump sum need be entered in the record, under "advancement" in a column headed "Personal Allowances." If some one chooses to spend only part of his pocket money and build a personal reward fund with the balance, that is his affair. If another chooses to scatter every penny hither and yon, that is his business. But it should be clearly understood that pocket money must be made to last a specified length of time, and that no more will be forthcoming during that period.

When you begin to keep a record it is a good plan to set down your assets and liabilities in opposite columns. Under *assets* or property (what you *own*), record the cash value of life insurance, the trade-in value of your car, cash in the savings bank, the balance in your checking account, the market value of stocks and bonds, the value of your home, the value of home furnishings and cash on hand. Under *liabilities* or debts (what you *owe*), list the amount of mort-

gages, any balance due on loans or installment purchases, and bills due and unpaid. The sum of assets less the sum of liabilities is your *net worth,* or what you have as a net balance. At the beginning of each "budget year," repeat this listing and watch the progress of your net worth. Does it grow larger each year, showing financial progress?

An inventory of house furnishings and their value should be kept in a safe place such as a safe-deposit box, and brought up to date each year. Insurance companies can usually supply you with a form for keeping this record. If a fire should destroy your property you could not depend on memory to calculate your loss in order to make a report to the insurance company.

It would not be fair if we omitted a "pattern" for making a budget. But we must reiterate our insistence that this pattern is only a guide in round numbers and is not to be considered rigid or unyielding in any way:

Rent (if heat is included)—*25 per cent of income

Rent (if heat must be supplied)—*20 per cent of income

(If you are buying your home, or already own it, the "rent" is the total of interest on mortgage, taxes, insurance, upkeep and repairs which should not ordinarily exceed ⅛ to 1/10 of income. If payments on principal are included it may reach ¼ to 1/5 of income.)

Clothes—15 per cent of income

Operating expenses—10–15 per cent of income

Food—20–35 per cent of income (the smaller the income, the larger the percentage that must be spent for food)

Advancement—15–20 per cent of income.

Savings (other than life insurance)—10 per cent of income

Life insurance—the face of your policies should amount to 2 or more years' income

"Let's have a look at the record" is a familiar political cliché, but it has its place in family finances. If good management and wise buying have come before, it won't be a painful process and it will open your eyes to "leaks" in expenditures.

A study of consumer expenditures in the United States, made by the National Resources Committee, for the year 1935–36, contains a chart which gives the average expenditures of American families, by

*Provided that in your community it is possible to provide safe shelter for your family for this amount.

income levels. We have selected the figures on four income levels, merely to show how money is spent, *not* necessarily how it should be spent! Savings are represented by the difference between money earned and money spent.

There never was a perfect budget, and there is a strong probability that there never will be. Mistakes will occur, and need not occasion any wailing or gnashing of teeth because such mistakes will prove helpful in setting up a better budget for next year. You will find that your income has taken on a surprising elasticity, and stretches much farther than before your budget was set up. And the reward system will bring you pleasure and profit.

Installment Buying

"Consumer credit" and "pay out of income" are words that we hear with ever-increasing frequency. Buyers are urged, sometimes under high-pressure tactics, to have all the things they need and want through the magic of "a small down payment" and "easy monthly payments" thereafter.

It is tempting to think that your savings account, if you have one, need not be disturbed in order to enjoy a new radio. Or, if you have no reserve fund, it is equally tempting to think that the radio can be paid for out of income.

Remove yourself from the source of high-pressure talk long enough to do a little clear thinking and figuring.

Ask yourself, first of all, whether you really must have the desired object immediately, or whether you can wait while you systematically accumulate a "reward fund" to pay for it outright. If you have a savings account, figures will tell you whether you will actually save money if you pay the necessary amount from this account and then pay it back to the account in "easy payments" (minus the interest which installment payments cost). The chances are that you will find that you *can* wait to accumulate the money, or that it would be cheaper to pay cash.

Installment buying is justified when a real need exists. For example, if an old refrigerator cannot be depended on to maintain safe temperatures, and if there is a baby in the family, it would be wise to buy a new refrigerator (on the installment plan) immediately, to safeguard the baby's health, rather than wait to accumulate the necessary amount. But a further question always is: what is the cheapest way to get credit when it is thus necessary?

The disadvantages of the ordinary installment plan are that it nar-

Average Expenditures of American Families by Income Levels, for the Years 1935–36

Income Level	All Items	Food	Housing	Household Operation	Clothing	Automobile	Medical Care	Recreation	Furnishings	Personal Care	Tobacco	Transportation Other than Auto	Reading	Education	Other Items
$1500–$ 1750	$1512	$527	$267	$166	$147	$123	$ 71	$ 42	$ 56	$32	$29	$16	$15	$11	$10
2000– 2500	1968	617	349	213	207	200	91	62	76	42	38	22	20	20	11
3000– 4000	2729	770	485	319	316	289	132	105	102	54	48	31	27	37	14
5000– 10,000	4454	1038	784	584	557	522	248	206	158	89	62	48	41	83	34

rows the choice of merchandise and reduces the chance for comparative shopping or "good buys." It has one advantage in that it satisfies wants and needs in the present rather than in the future.

Therefore, before you are tempted too far, be sure that:

1. A real need exists.
2. You have made cost comparisons wherever possible.
3. You know how much interest you will have to pay.
4. You understand every word of the contract.
5. You can keep your promise to pay.

It is comforting to know that the great majority of firms that sell goods on the installment plan are ethical. But in self-protection, be sure before you sign.

So-called *"add-on contracts"* are unfair to the purchaser. This is the way such contracts work: Mr. Smith buys $150 worth of furniture and has 15 months in which to pay. After 12 months he buys another hundred dollars worth of furniture. If he reads his contract down to the last line of fine print, he will find that until this additional amount is paid he will not own the furniture he purchased in the first place. The wary buyer will therefore ask pertinent questions prior to signing for a second purchase before the first purchase is paid for in full.

Double-security contracts are, in the words of one expert, "particularly offensive." The double security is a wage assignment clause or a clause which constitutes a special claim against the purchaser's assets in the case of default. Be sure your contract does not contain a clause of this kind.

Deficiency judgments and payments are entirely legal and within the rights of the dealer. A buyer cannot return purchased goods before they are completely paid for, and escape the consequences. Repossession and resale cost the dealer money. For example, Mr. Jones buys a car for $600 and makes a down payment of $240. The balance is to be paid in 12 installments of $30 each. Mr. Jones finds, after making 3 payments totalling $90, that he cannot continue, and returns the car. He has paid a total of $330 to the dealer. The dealer resells the car for $270 but repossession had cost him $30. Thus he has made $240 by resale. The grand total is $570, but the original sale price was $600. Thus the dealer has a legal and enforceable claim against Mr. Jones for $30.

Read your contract carefully to see whether *guarantees* are waived. You may find that you agree to pay regardless of damage or unsatis-

factory performance. If the goods prove unsatisfactory it will be necessary to go to court and have the case examined on its merits. Waivers should be considered seriously, and you should be sure that the dealer is dependable and backs the goods he sells.

Contracts that are long, detailed and printed in part in small type are likely to contain "jokers." *Read every word before you sign.* Reliable dealers usually submit brief, clearly worded contracts that set forth all details in terms that are easily understood.

The above facts point out that it is wiser to build up credit so that it will be possible to borrow funds at reasonable interest and pay cash to the dealer.

Borrowing Money

It is no disgrace to borrow money if a real need exists, and if the borrower is certain that he can pay it back. Of course only the amount necessary to meet the emergency should be borrowed.

The borrower should know four things before a contract is signed:

1. The total amount of money which must be paid back.
2. The amount of each installment and the intervals at which payments are to be made.
3. The total cost of the loan (interest).
4. The terms of the contract.

There are many sources for loans and, in self-protection, the borrower should choose a company which operates under a state license or state regulation.

The company usually bases its willingness to lend money on two things:

1. The *earning capacity* of the borrower.
2. *Security,* or proof that the loan will be repaid even though the borrower fails to carry out his promise.
   (*a*) *Stocks and bonds* (Interest rate is low when quickly salable stocks and bonds are given as security. If the value declines, the borrower must make good the difference, or the lender may be obliged to sell the securities in order to avoid loss. If the stocks and bonds are thus sold at a profit, the borrower receives a refund.)
   (*b*) *Insurance policy* (Amount of the loan depends on the cash

value of the insurance. Life insurance companies and banks make loans on policies. The amount depends on the size of the policy, its kind and the years it has been in force. If the borrower dies before the loan is paid back, the company will deduct the amount remaining unpaid, plus interest, from the settlement value of the policy.)

(*c*) *Chattel mortgage* on automobile or other property.

(*d*) One or more **co-makers.*

It is important for a borrower to know the types of organizations which make loans:

1. *Credit Unions:* A group with a common interest, such as a lodge, a business or a community, joins in a cooperative plan to make small loans available to its members.
   These unions are organized under state or federal laws.
   Members buy shares and pay an entrance fee. A profit is paid to shareholders.
   The maximum interest rate is 1 to 1½ per cent per month on the *unpaid balance* of loans made to members. A co-maker is usually required to guarantee the loan, but sometimes a second mortgage on real estate or a chattel mortgage on home furnishings is accepted as security.

2. *Cooperative Banks, Building and Loan Companies and Federal Loan Banks:* These organizations operate in much the same way as Credit Unions but are open to a wider clientele and are particularly helpful if families wish to borrow in order to build. They also offer excellent plans for saving.

3. *Commercial Banks:* The Personal Loan Departments of commercial banks will make small loans which run for a period up to a year.
   A co-maker or other security is required.
   The borrower's application must be approved by the bank after enquiry.
   The interest rate is governed by state laws and the bank's own policy. A service fee is sometimes charged. This fee and the interest are usually deducted in advance. A delinquency fee is charged if payments are not made regularly. Loans from a commercial bank are usually the cheapest and most satisfactory personal credit, when available.

*A co-maker is a person who guarantees your repayment and agrees to pay it himself if you default.

4. *Industrial Banks:* This type of bank usually operates under the jurisdiction of the banking department of the state in which it is located.
   An application is filled out by the borrower, and an investigation is made by the bank.
   A co-maker or other security is usually required.
   Interest and the amount of the service fee are deducted in advance.
   The amount of interest is governed by the banking laws of the state.
   A delinquency fee is charged if payments are not made as promised.

5. *Finance Companies:* These companies specialize in loans to borrowers who have little or no security to offer, and interest rates are consequently higher.
   One or two co-makers are usually required if other security such as a chattel mortgage cannot be arranged. These companies do not foreclose unless the borrower makes no effort to repay, or is attempting to defraud. Finance companies operate under the Small Loan Law in states where this law is in force. (Unfortunately, legal supervision is lacking in a number of states.) The borrower receives a printed or written statement which shows clearly the amount of the loan, the date it was made, the maturity date, the nature of the security and the rate of interest charged. When the loan is paid in full, all papers must be marked "paid" or "cancelled" and returned with any securities to the borrower. Charges cannot be deducted in advance on the unpaid balance. Under the Small Loan Law these companies are allowed to charge up to 3½ per cent interest on the unpaid balance. The borrower has 12, 15 or 20 months to pay.

6. *Pawnbrokers:* A pledge of personal property such as jewelry or silverware must be delivered into the custody of the lender and held until the loan is repaid.
   Most pawnbrokers operate under a city license, as only a few states have regulations for this type of lending. The amount of the loan is usually 50–70 per cent of the forced sale value of the property, and usually cannot be repaid in installments. The cost of the loan varies, and the borrower should know what this cost is before surrendering his property.
   The pawn ticket should be read carefully before leaving the shop, to find out when the property will be sold if the loan is not paid.

7. *Illegal Lenders:* Any one who unwittingly borrows money from a "loan shark" is apt to suffer heavy penalties in the form of hid-

den charges, threats and huge fees if payments are delinquent. Illegal lenders should be reported to a local Better Business Bureau, Welfare Agency, Legal Aid Society or prosecuting attorney. Unscrupulous agencies are still operating in a number of states. You can get information about conditions in your state from the Pollak Foundation, Newton, Mass., or your local Better Business Bureau.

Precautions:

1. Try for credit first at a commercial bank.

2. Never deal with a company not licensed by the state and under state supervision. The license must be displayed in full view and carry the date of the year of issue.

3. Never sign a contract unless you clearly understand the terms.

4. Think carefully before you act as co-maker or sign a note for any one. Your signature makes you responsible for payment if the borrower defaults or becomes unable to pay. Can you afford to undertake this responsibility?

5. If you wish advice, information is given by Better Business Bureaus, State Banking Departments, Legal Aid Societies, and Welfare Agencies.

CHAPTER IX

HOME SAFETY

Home, to almost every one, is sanctuary—the one place where we find release from the cares and affairs of the world, where we are protected and safe from mishap and tragedy.

But is home really a safe place? Not according to statistics! Actually the total number of fatal accidents which occur in the home is about one third of the number of all fatal accidents. Non-fatal home accidents also reach a staggering total every year.

The encouraging note is that most of these accidents could be avoided. The Home Safety Committee of the National Safety Council has analyzed thousands of home accidents and found that they can be attributed to three major causes—carelessness, indifference to risk, and ignorance of danger.

There is no need to make ourselves nervous. This is the worst attitude to take, and one that will do no good to any one. Besides, nervousness is one of the reasons accidents happen. The constructive thing to do is to make our own home a safe place to live in, through greater efficiency in home management. If each of us does this, the appalling total of home accidents will grow progressively less.

FIRES

Modern construction of houses resists fire, but it remains a major obligation for us to prevent fires by every means in our power. In order to do this intelligently, we must know the common causes of fire, and eliminate them from our homes.

Common Causes of Fires

1. *Rubbish*

Never allow trash of any sort to accumulate in or around the house. If you cannot dispose of it immediately, put it in a metal can with a heavy metal cover until it can be burned or collected. When it is necessary to burn rubbish yourself, use an incinerator approved by the Underwriters' Laboratory. Never burn trash near the house, or on a windy day.

Oily cloths, paint cloths and greasy dungarees or overalls are a menace. Never leave them in warm closets or folded and laid on a shelf. Keep cloths used for furniture polish or for painting jobs, in tightly covered metal boxes, and hang clothing in a well-ventilated place until laundered.

Newspapers have an innocent air, but if you leave them in heavy piles in a warm basement or attic, you are literally playing with fire, because a combination of dampness, heat and chemicals in the ink can start a blaze.

Holiday wrappings, crepe paper decorations, Christmas trees and greens should all be considered as rubbish once the festive occasion is over, and disposed of quickly.

2. *Chimneys, Flues and Fireplaces*

Neglect is often a cause of chimney fires. Yearly cleaning and inspection (page 417) are essential as preventive measures.

All flues and pipes should be surrounded by fireproof material if they pass through wooden floors or partitions or are situated near them.

Cracked bricks, a defective hearth or fireplace opening are all fire hazards, and should be repaired as soon as noticed.

If resinous wood such as pine is burned in a fireplace, particular care should be given to soot accumulations which may catch fire easily.

Always use a fire screen to keep sparks or embers off rugs and floor and to protect clothing.

Never leave the house or retire for the night if there is a blazing fire in the fireplace. Wait until it burns down, or extinguish carefully with water and leave the fire screen in place.

Wood ashes from a fireplace or stove are extremely treacherous. They may look quite dead and still be hot enough to cause a fire. So dispose of them in a metal barrel.

3. *Heating Systems and Space Heaters*

Seasonal overhauling of the heating system (page 417) brings to light all defects such as rusted pipes, loose connections or cracks which are potential fire hazards. Faulty installation of a heating system is a source of danger. If you are in doubt, have an inspection made by a competent authority (page 417).

The base of a furnace should rest on cement, concrete or brick.

Never leave the house when a draft in furnace or stove is open.

Never use kerosene to kindle a fire.

Never put hot ashes into anything but a metal container.

Room heaters or space heaters should be set at least 18 inches from the wall to prevent any danger of overheating the wall. The flooring

under non-portable heaters, such as a Franklin stove, should be protected by sheet metal which is larger than the base of the stove and which extends at least 12 inches beyond the front of the stove.

4. *Matches*

In the hands of thoughtless persons or children, matches are always a hazard.

Safety matches which strike only on their own box are preferable to the strike-anywhere type. Matches approved by the Underwriters' Laboratories do not throw off sparks when struck, and are treated to prevent afterglow. The hot heads will not drop off after use. Look for a statement of the Underwriters' Laboratories approval on the match box. All matches should be kept out of reach of children, and away from sources of heat.

Be sure a match is out before throwing it away. And never throw one into a waste basket, out or not.

Never light a match in a closet or garage—use a flashlight.

5. *Careless Smoking*

Probably some persons in your family are smokers. If so, train them in the way they should go and eliminate them as fire hazards only when you are absolutely sure the training has taken effect. And even then, keep a watchful eye on them.

Provide plenty of large ash trays and place them in strategic positions in each room. This is cheap insurance against the possibility of the waste basket being used. Ashtrays with a center holder for book matches are hazardous. If a lighted cigarette ignites the matches, severe burns may result. Before you empty ash trays be absolutely certain that no ends are smouldering.

Teach each smoker to place a burning cigarette correctly on the rim of an ashtray, burning end out, so that if it is forgotten the butt will fall on the tray and only ashes will fall on the table.

Be a complete martinet in forbidding every one to smoke in bed. Tell them you value their lives even if they apparently do not.

6. *Gasoline, Kerosene and Other Flammable Compounds*

One pint of gasoline has the explosive potential of a pound of dynamite. Would you store dynamite in your house?

Yet daily the huge total of deaths and frightful injuries from explosions caused by gasoline, benzine or naphtha mounts.

Let us shout it from the housetops—never bring a drop of gasoline into your house! Never use it except to run your automobile. Banish appliances operated by gasoline—they are never safe.

And if you are tempted to use gasoline, benzine or naphtha for home dry cleaning, believing it safe if you work out of doors, remember that friction can generate a spark. And that will be the end of all temptation for you.

Kerosene, if treated with respect, is relatively safe. Modern kerosene ranges, hot-water systems and space heaters are designed for safe and efficient operation if installations are made correctly and if instructions for use and care are followed carefully. Look for the Underwriters' Laboratories approval seal on kerosene-burning appliances.

Kerosene lamps should have wide bases and preferably should be made of metal rather than glass, because of breakage hazards. Never let children carry such lamps, and never set them on an insecure surface or on a tablecloth which a child might pull off. Never place a lamp near curtains.

Never fill lamps or oil stoves while they are lighted or hot. Fill receptacles by daylight, away from any open flame. Keep wicks trimmed and reservoirs and lamp chimneys clean. After lighting a lamp, don't leave it until you are sure the wick is properly adjusted so that it will not flare up.

Never use kerosene to kindle a fire.

7. *Defective Wiring*

Was the wiring in your home installed by an expert electrician, in accordance with the National Electrical Code? If you are not sure, have it checked. Inspection is necessary also, whenever you make any changes in wiring, in order to eliminate the danger of overloading the circuit.

Worn cords are a fire hazard and a shock hazard, and should be replaced immediately. Make a frequent inspection of cords yourself. When you buy new cords, look for the label of the Underwriters' Laboratories—your assurance that the cord will wear well, and that it is safe as long as it is kept in good condition. Never nail extension cords to wall or floor. Keep cords away from radiators and heating pipes. Cords which are used in laundries and basements should have special waterproof covering.

Always grasp the *plug,* not the cord, when disconnecting any electrical device. Never bend or twist a connecting cord; this may break the fine wires inside. Hang cords over two wooden pegs or broad hooks about six inches apart.

Makeshift wiring should be outlawed. Instead of risking fire or shock by running long extension cords along the baseboard and under rugs, or connecting several appliances to one outlet by means of a multiple

plug, install additional outlets and house circuits. Wiring for radio installations should be done by an expert, just as house wiring is.

Fuses are safety devices. If one "blows" it means trouble in the form of an overload or short circuit. Don't replace it until you know what has caused the difficulty and have remedied it. Without fuses to warn of trouble, and to disconnect the circuit in case of trouble, the wires would become overheated and start a fire. Never try to restore the flow of current by using any makeshift or substitute for a fuse. This is a dangerous practice, as is using a larger fuse, because any such device will overload the wiring, and the chances are nine out of ten that the wires will overheat and start a fire. The fuse for a lighting circuit should not be larger than 15 amperes.

Be certain that your radio is properly grounded, and that the antenna is equipped with a well-grounded lightning arrester. Never attach the antenna to electric-light poles or over or under power lines. Radio wires which lead through walls or partitions must be encased in tubes of porcelain or rubber.

Many a fire has started because an electrical appliance has been left connected and forgotten. Make it an automatic reflex action to pull out the plug the moment you are through using an electrical appliance.

Electrical heating pads are great comforters, but for safety's sake look for the Underwriters' Laboratories Seal before you buy.

For information and suggestions concerning adequate wiring, see pages 477–482.

8. *Fat Fires*

Broilers that are not well designed or properly used may cause a fat fire. If one starts, turn off the heat at once, and throw salt, bicarbonate of soda or sand on the blaze, if a foam-type fire extinguisher is not at hand. *Never try to put out a fat fire with water or flour.* Water spreads the blaze and flour may explode.

Don't fill a deep fat frying kettle more than two-thirds full or the fat may spatter or boil over and blaze furiously, spreading fast. If this should happen, turn off the heat, and cover the kettle with a metal cover if you can do so at no risk to yourself. Use a foam-type fire extinguisher, salt, bicarbonate of soda or sand to smother burning fat outside the kettle.

If a fat fire gains headway, call the fire department.

9. *Candles and Lamps*

Candles give a lovely light, it's true, but don't take them up into the attic or into a closet to light your way. For this purpose a flashlight is not only more efficient but much safer. Keep lighted candles away

from curtains or flimsy materials and out of sudden gusts of air.

Candlesticks should have a wide base, and the candles should be selected with care so that they fit firmly into the holder. A wobbly or top-heavy candle is a real menace. As an added precaution, hold the base of the candle over heat until it begins to melt, then press it firmly into the candlestick. Or better still, fit rubber collars (from the dime store) around the bases. Hurricane candle lamps are very much the fashion, and are much safer than naked candles.

Extinguish a candle before it burns down into the socket of the candlestick. Never use a candlestick made of combustible material such as celluloid.

Lampshades are often made of material which ignites if overheated, therefore examine your lamps to be sure there is a generous space between the shade and the lamp bulb. Shades on candles are a definite invitation to fire.

Be sure lamp bulbs are perfectly dry after cleaning before you replace them in their sockets (page 197).

10. *Gas Leaks*

Act the moment you smell escaping gas, because your nose soon becomes insensitive to this odor. Unless the source is obvious—an open jet on the range, for example—don't attempt to locate it yourself. Telephone the gas company at once.

Is it really necessary to say "never look for a leak with a lighted match or candle?" Even a flashlight is not absolutely safe, for under certain unusual circumstances, flashlight batteries can set off an explosion.

Local plumbers may not be competent gas fitters. Have any gas piping installation done by experts. If you are in doubt about the present installation, have it inspected by a trained employee of the gas company.

11. *Fireworks*

The fun of fireworks isn't worth the price so often paid in fires, injuries, disfigurements and death. On the Fourth of July, take the children on a special pleasure jaunt, or to see a municipal display of fireworks from a safe distance. Keep fireworks out of your house and out of your children's hands.

12. *Christmas Decorations and Lighting*

Candles on the Christmas tree, cotton batting around its base, parcels in flimsy wrappings piled all around—and Disaster, one of the invited guests!

If you must light the tree, use electricity, choose lighting sets that are

marked with the approval of the Underwriters' Laboratories, and don't overload the circuit. Never put paper shields over the lights.

Dry Christmas trees and wreaths are highly flammable and ignite easily. Get them out of the house soon after Christmas and be sure that they do not fall into the hands of youngsters who are looking for bonfire fuel. Hand them to the garbage collector yourself, or see that they are safely burned.

13. *Celluloid*

Celluloid and similar compounds are dangerous because they contain explosive elements and are flammable. It is not wise to buy toys, household ornaments, toilet articles or other objects which are made of these materials. Such objects are ignited by heat and must be kept away from stoves, electric irons or curling irons, electric lights, etc. Never smoke while you are wearing glasses with flammable frames, or an eyeshade made of such material.

Fire Fighters

Many a disastrous fire could have been put out before it did much damage if a fire extinguisher had been near at hand. One should be kept in the kitchen, one in the basement and one in the upper hall, accessible from the bedrooms. It is a good idea to have one in the attic and one in the front hall downstairs, if possible. Of course you have one in the garage. There are several types of fire extinguishers, each type designed to put out a specific type of fire. Follow the manufacturer's directions regarding purpose, installation, and use.

When you use an extinguisher, aim at the burning material itself, not at the flame. Be sure each member of the family understands how to operate the extinguisher. There's no time to study directions after a blaze starts.

Automatic sprinkler systems and fire alarms may now be installed in homes, and are splendid protection.

It is sometimes possible to have faucets on stair landings in the attic and basement, with short lengths of hose attached, ready to put out a blaze that starts in either place. A garden hose may be used for outdoor fires.

Some fires can be beaten out by a broom, rug or coat.

It is possible to fireproof fabrics at home quite easily. Window curtains, draperies, ironing board covers, pot holders, rugs near fireplaces, children's clothes and house dresses can be safely treated with a fireproofing solution which will not affect color, appearance or "feel" of the

fabric. Articles so treated are not 100 per cent fireproof, but are fire-resistant and char instead of blazing. The following formula, recommended by the Government, is cheap, stable, non-corrosive, non-caustic and non-poisonous:

Fireproofing Solution

Dissolve 7 ounces borax and 3 ounces boric acid in 2 quarts hot water. Dip *dry* article in solution until thoroughly wet. Wring out and dry. Or spray the solution on rugs, draperies, etc., with a common garden spray until thoroughly wet. If the fabric is water-resistant add enough soap to the solution to make suds. Articles must be retreated after each washing.

What to Do in Case of Fire

The House on Fire

1. First of all, keep your head and don't give way to panic.
2. Call the fire department instantly. If you telephone, say "Fire Department—Emergency," and stay at the telephone until you give the operator your address. If you turn in an alarm from an outside fire-alarm box, wait beside it to direct the firemen.
3. Never go into a room where there is a strong blaze.
4. Keep out of a smoke-filled room or basement.
5. If you smell smoke and are trying to trace the fire, keep windows closed and shut doors after you. A draft will fan a smoldering fire into flames. Close all doors that will confine a blaze.
6. Never open a door without touching it to see if it feels hot. If so, *don't open it;* if not hot, open with extreme caution, bracing your foot against it. Otherwise pressure created by the fire may fling it open in your face, and make it impossible to slam it shut quickly.

Clothing on Fire

1. Never run.
2. Drop to the floor and wrap yourself in a rug, blanket, coat or any heavy covering at hand.
3. If nothing is at hand, roll slowly, and beat out the flames with your hands.
4. The person coming to your aid should use a fire extinguisher, water or sand to smother the flames.

A Few Added Precautions

It is essential that every member of the family should know all means of escape in the event of fire.

Never jump from a window except as a last resort. If you cannot get out of the bedroom, tear sheets into strips, make a rope, fasten one end securely, and slide to the ground. Or, if you must jump, throw the mattress and bedding out of the window to break your fall.

Life before property is a cardinal rule.

ACCIDENTS IN THE HOME

Falls

Unaccountable as it may seem, this most easily preventable home accident heads the list. With a little forethought and care in doing away with obvious hazards, and a little less recklessness on our part, the huge toll of accidents due to bad falls could be greatly reduced. Let's take a look at our homes and see whether any of the following hazards are lurking there.

1. *Floors*

If floors are finished properly, they will not be slippery. Too much wax is the great offender. A thin *hard* film which protects the floor is all that is necessary. If the wax smears when a piece of furniture is moved, or if footprints show, there is too much wax. Use only a small amount of wax, and if it is the type that requires polishing, rub it down to a hard finish. See page 143 for detailed directions for applying the various types of floor waxes.

Never leave objects lying in the middle of the floors.

2. *Scatter Rugs*

If you have placed a scatter rug at the head or foot of a stairway, anchor it or take it away at once. In other locations, place a pad of non-skid material under each rug, or fasten strips of thin rubber netting at least three inches wide on the edges, or paint the back of the rug with skid-proof material. The fasteners described on page 174 are also a safety measure.

3. *Stairs*

Hand rails are essential on all stairs, even short flights such as those leading to the back porch. All stairways should be well lighted and the lights should be controlled by switches located at the head and foot of

the stairway. Gates or barriers should be placed at the head of the stairs when small children are on the second floor.

Never leave things on stairs or landings, with the idea of carrying them up or down later on. Some of the worst accidents are caused by tripping over such objects.

Don't go up or down stairs with your arms loaded.

Paint the top and bottom step of the stairs leading to the basement white or yellow for better visibility.

Repair stair treads that are broken or loose at once. Stair carpeting that is torn or loose is a definite hazard. Rubber treads or metal strips should be firmly tacked in place.

4. *Windows, Balconies, Second Floor Porches*

Be certain that screens in windows are in good repair and securely fastened. Children, and even grownups, sometimes lean against them.

All balconies and porches above the first floor should be guarded by sturdy railings.

5. *Bathtubs*

Every tub should be provided with a strong hand-hold to grasp when getting in or out. A second hand-hold on the wall is an additional precaution. Shower stalls need grasping rails also.

Make it a rule to be certain that the soap is in the soap dish before you start to get in or out of the tub.

The use of non-skid mats in bathtubs and shower stalls or on the floor beside the tub makes bathing a safer pleasure.

Never leave a small child alone in the bathtub or in the bathroom.

6. *Step-Ladders vs. Chairs*

When we spoke of recklessness at the beginning of the chapter, we had a vivid picture of all the makeshift arrangements used every day for climbing, in order to reach inaccessible shelves or to hang curtains or pictures.

Placing a pile of slippery magazines on a chair, which seems an easy way at the moment, may mean you'll never climb or reach for anything again.

A safe step-ladder that locks in position should be part of the equipment of every home. Sturdy step-stools with wide bases and broad treads are inexpensive insurance against broken bones.

Never use chairs, tables, boxes or books for climbing.

7. *Sidewalks*

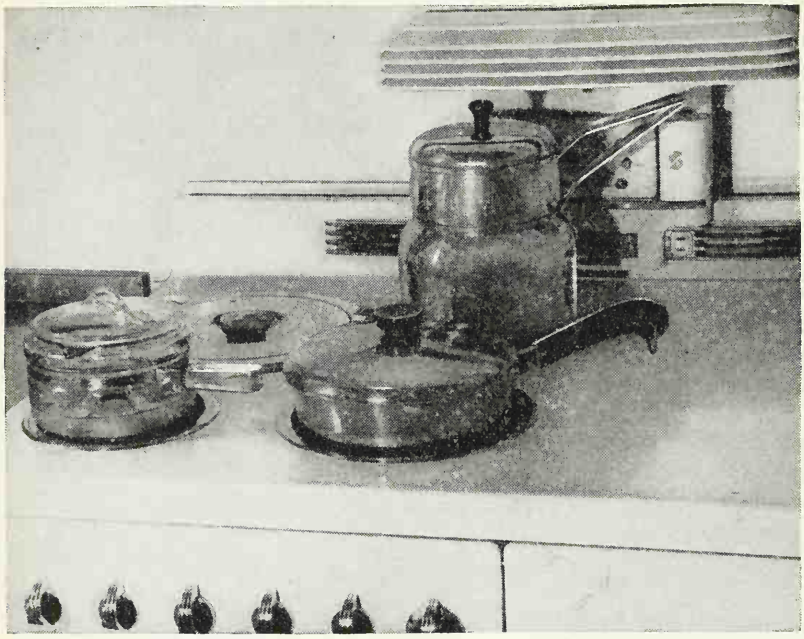
Scatter ashes, sand or salt on icy walks. Remove wet leaves at once.

Photograph by A. F. Sozio

A sturdy step-stool with wide base and broad treads is good insurance against falls.

8. *Poor Lighting*

There should be a wall switch at the side of every entrance to every room, so that lights can be switched on before entering. Groping through dark rooms has caused many a bad fall.



Photograph by Patricia Hall

Turn handles of pots and pans away from the edge of the range to prevent accidents.

Burns and Scalds

1. *Hot Liquids*

Kettles filled with hot water or other liquid never should be left near the edge of any surface. It is easy to knock them off accidentally, with painful and sometimes serious results. Kettles, pails or tubs of hot water must never be left on the floor unguarded.

Handles of pots and pans should be turned inward when they are on top of the range or work surface, for the same reason.

Keep children out of the kitchen when you are handling hot liquids.

Use a bath thermometer for testing the temperature of bath water for a baby or an invalid. Your hand is not a safe guide.

Scalding water in the shower or bath may cause severe burns. If the water heater operates automatically, set the control so that water from the hot-water tap is not at scalding temperature (140° F. or more). Test the temperature of bath or shower before getting in. A mixing valve on faucets and shower heads is a safety measure.

2. *Steam*

Steam from the teakettle spout may inflict a bad burn. Keep the spout turned inward. Take time to be careful when draining steaming foods, working near steaming kettles, or lifting off lids. Remove pot covers by lifting the far side first, so that steam will escape away from your face.

3. *Hot Fats*

Use a reasonably deep saucepan for deep-fat frying, and never fill it more than two-thirds full. If it has a handle, turn it toward the center of the top-stove surface, away from you. Be careful not to let any water or other liquid fall into the kettle of hot fat, or your hands or face may be burned with sputtering fat.

4. *Matches*

Keep matches out of reach of children.

Close the cover of "book matches" before you strike one or they may all flare at once, inflicting a painful burn or even setting your clothing on fire.

Strike all types of matches away from you.

Break used matches in two before throwing them away.

5. *Other Hazards*

Elsewhere we have spoken of the necessity for using a fireplace screen, and the menace of persons who smoke in bed.

Poisons

Germicides, cleaning reagents, insecticides, rat exterminators and other poisonous substances have no place in the family medicine cabinet, or in any easily accessible storage shelf. If there are children in the family, keep poisons on a high shelf, preferably under lock and key.

Label all bottles or jars containing poisonous materials "P O I S O N" in large clear letters. Make them identifiable even in the dark by large headed pins thrust into corks, or bells tied around bottle necks.

Never use insecticides or similar products when there is food around or where children and pets can get at them.

Keep ammonia and substances for cleaning drains out of the reach of children.

Be thoroughly familiar with antidotes for poisons*; but in an emergency if you can't remember the antidote *don't take time to look it up*. The important thing is to get rid of as much of the poison as possible at once. This can be done by diluting, washing out and inducing vomiting. Make the victim drink quantities of one of the following liquids: soapsuds, salt water, baking soda water, dish water or milk. *Call a doctor at once.*

POISON	ANTIDOTE
Strong Acids (such as sulphuric, nitric, hydrochloric or oxalic)	Warm water every 10 minutes. Milk or egg white or 1–2 ounces milk of magnesia.
Strong Alkalies (such as lye, household ammonia or washing soda)	Warm water repeated frequently. Lemon juice or dilute vinegar or salt solution—1 teaspoon in 1 glass of water every 10 minutes.
Nerve Depressing Drugs (such as "sleeping tablets" or other sedatives or opiates)	Induce vomiting by giving 1 tablespoon mustard in warm water or 1 teaspoon ipecac. Repeat in 15 minutes. Artificial respiration if necessary. Apply dry heat. Black coffee. Keep patient awake and make him walk if possible.
Suffocating Gases (such as carbon monoxide or illuminating gas)	Fresh air. Keep warm with blankets. Artificial respiration.

Food Poisoning

Never use a can of food if the can is bulged at either end. The bulge indicates gas formation inside the can, caused by spoilage.

Do not can meats, fish, poultry or non-acid vegetables at home unless you use a steam-pressure cooker for processing. Fruits and tomatoes may be processed in a water bath or oven with safety.

Dry-Cleaning Hazards

If you are toying with the idea of saving money on cleaning bills by doing a little dry cleaning at home with gasoline, benzine or naphtha,

*See the American Red Cross First Aid Textbook for detailed information concerning antidotes for specific poisons that do not fall into the general grouping above.

please spare a few minutes first to read page 89 of this book. It may save your life.

Non-flammable cleaning liquids such as carbon tetrachloride should be used only in small quantities, for spot removal (page 314)—and never for cleaning entire garments. The vapors are poisonous.

In other words, don't attempt any dry cleaning at home, ever!

Asphyxiation

Carbon monoxide is a deadly enemy to life that strikes quickly and without warning, because it has no noticeable odor. Defective pipe connections in the heating system, unvented gas heaters, space heaters other than electric, used in an unventilated room, gasoline engines, such as automobile engines, running in closed basements or garages, improperly banked fires in ranges or furnaces (page 420), are all producers of this deadly gas.

Inspection at frequent intervals will reveal defects in pipe connections. Correct installations or a check of present installations will assure you that gas heaters are properly vented into a flue. But only you can see that rooms are adequately ventilated, that engines are not allowed to run in closed spaces, and that furnace fires are banked correctly (page 425).

Symptoms of carbon monoxide poisoning are lassitude and weakness, dizziness and sometimes nausea and headache. If there is any reason for suspecting the presence of carbon monoxide when such symptoms occur, get into the fresh air at once.

Moth sprays which deposit a white frost-like film when they are sprayed on fabrics should be used in a well-ventilated room, as the fumes are toxic.

Smoke Explosions

Painful injuries, often eye injuries, result from smoke explosions caused by improperly banked fires. Incomplete combustion and accumulation of gas cause an explosion when the furnace door is opened in the morning. The same thing may happen if a fire in a coal range is not banked properly. On page 425 you will find directions for banking a fire correctly and safely.

Electric Shock

The first rule in guarding against shock hazards in the home is to buy electrical equipment made by a reliable manufacturer and sold by a reputable dealer, such as your lighting company. In the long run this

is true economy, for such appliances will not only give longer service, but safe service if you care for them properly, and keep them in good repair.

Remember that water conducts electricity. Never touch any electric cord or fixture while you are in the bathtub or shower or standing on a damp floor. Damp hands are dangerous—dry them thoroughly before handling electrical equipment; you might touch an exposed part and get a shock.

Use porcelain lighting fixtures in the bathroom and laundry.

Portable electric devices such as space heaters or curling irons should be used with extreme caution in a bathroom, because water pipes and damp surfaces are excellent conductors of electricity. Built-in electric heaters are safe. If the floor is damp, or if you are touching some grounded object such as a stove, radiator, telephone, bathroom or sink fixture or pipes, don't touch an electric cord or fixture. Never touch two lamps, two switches, or a lamp and grounded metal at the same time.

Worn connecting cords are shock hazards (for repairs, see page 483). If an appliance cord sparks, have it repaired or replaced by a licensed electrician.

Old-fashioned open sockets are dangerous. Put screw-plugs into them and leave them there.

Shut off the current before you make any adjustments on electrical appliances.

Keep the laundry floor as dry as possible. As a safety measure, stand on a rubber mat or wooden rack while you work.

Cuts and Wounds

Injuries inflicted by cutting edges are all too frequent. Children's inquisitive fingers are often wounded when sharp-edged objects such as knives, scissors, razors, etc., are left within their reach.

Broken glass should be swept up carefully and emptied into a tin can. Stuff paper on top of the glass and push the top of the can down over it. Use dampened cotton batting to pick up tiny slivers safely.

Never throw discarded safety razor blades loosely into waste basket or garbage can. First put them in a closed container.

In using a knife, cut away from your hand, never toward it.

Use can openers that leave a smooth edge. Jagged edges left by old-fashioned openers can inflict a mean cut.

Wringers on washing machines have inflicted painful injuries to careless persons. Dangling jabots, ribbons, etc., on a dress front, loose cuffs, even hair that is not pinned out of the way, may catch in the moving

wringer with disastrous results. As you put clothes through the wringer, keep your hands at least a foot away from the rollers at all times. Modern wringers have safety releases, but presence of mind is rare when a person is suffering extreme pain. Keep children away from the wringer when the washer is connected.

Firearms

All firearms should be unloaded, dismantled and locked in a strong chest with all ammunition.

Never lean a loaded gun against a wall.

Is it necessary to warn you to keep firearms out of reach of children?

Protecting the Children

Never leave small children alone in the house, even for a few minutes.

A baby's first impulse is to put any small object within reach into his mouth. Moral: Don't leave such objects lying around, and teach children old enough to understand not to put anything except food into their mouths.

Toys with sharp points or edges are taboo.

Keep electric fans on a high, solid shelf, out of the reach of children.

Place a gate or barrier at the head of the stairs when small children are on the second floor.

Children love to fly kites, and it is up to you to see that they indulge in this sport only in locations where there are no power lines nearby. A damp string leading from a kite in contact with a power line conducts electricity and causes shock. A still greater danger occurs when a kite becomes entangled and the child climbs a pole or tower to free it. He may come in contact with a live wire, or receive a slight shock which nevertheless startles him so that he loses his hold and falls.

Teach children never to play with electrical equipment, floor plugs or sockets.

Fireworks are discussed on page 92.

Never instill fear in your child's mind. Appeal instead to his intelligence and you will find ready response.

Handling of Tools for the House and Garden

Hang scythes and sickles, heads up, on a wall; never leave them on the ground, or hanging in a tree. All tools not in use should be put away in racks, on shelves or hung up.

Carry all cutting tools blade down. Always cut *away* from you in using a knife. Be very careful in using hatchets and axes.

Never use any substitute for a hammer. In driving nails, start the nail with a few light taps, then remove your hand before driving it in.

Never leave a hoe, rake or pitchfork lying or standing with the head pointing up.

First Aid

"Call the doctor" is the best advice we can give you, if an accident should occur.

Every household should have a copy of the *American Red Cross First Aid Text Book,* and should be familiar with the advice it contains concerning first aid in accidents, poisoning, etc. It will tell you what to do until the doctor can get there. This little book costs less than a dollar at your local Red Cross Chapter.

"Prone-pressure" resuscitation is something every one should know how to do. The Red Cross Manual explains and illustrates this procedure. Learn it and practice it so that if ever it is up to you to save a life in this way; you won't be found wanting.

Enroll in a class in First Aid. You will find it worth the time and effort and it will be enjoyable too.

THE HOME MEDICINE CABINET

In all too many homes the medicine cabinet is sadly neglected. Old bottles and boxes of forgotten prescriptions are allowed to accumulate to the point of congestion. When some simple remedy is needed it cannot be found in the clutter, or perhaps it has been used and never replaced. And yet, if there is one spot in the house where order should be heaven's first law, it is in the medicine cabinet.

There are several *don'ts* which must be observed:

1. *Don't* keep dangerous poisons in the medicine cabinet.
2. *Don't* keep prescriptions which contain narcotics (codeine, opium or morphine) in the medicine cabinet.
3. *Don't* save prescribed medicines after the need for them is over. Most drugs deteriorate with age and a prescription for a definite illness is not likly to be useful in the future.

The following materials and remedies should always be on hand. Keep any which are poisonous in a safe place (page 99).

Medicines

Stimulant (for fainting or exhaustion)

Aromatic spirits of ammonia (2 ounces) or ampules of aromatic spirits of ammonia.

Miscellaneous

Baking soda (sodium bicarbonate)—to be used as a gargle or as a remedy for mild indigestion ("sour stomach").

Common salt—to be used in solution as a gargle or as a dentifrice.

Boric acid solution (8 ounces)—to be used as an antiseptic or in mild solution as an eye bath.

Mineral oil or milk of magnesia—to be used as a mild laxative.

Disinfectants

Tincture of Iodine (POISON—see page 99)—for minor cuts. Paint on with cotton wrapped around toothpick or glass rod on bottle top. Do not bandage over iodine.

Boric acid powder (2 ounces), or in solution as above.

Rubbing alcohol (POISON—see page 99)—to be used only if recommended by the physician in charge.

Hydrogen Peroxide—use diluted with an equal amount of water as a cleansing wash for wounds. Use 1 part hydrogen peroxide with 3 parts water as a gargle.

Ointments

Vaseline U.S.P. (1 tube)—for skin abrasions, chafing or sunburn.

Antiseptic emollient (1 tube)—for superficial burns.

Boric acid ointment (1 tube)—for skin abrasions.

First Aid Materials

3-inch sterile gauze squares (several).

Bandage (1 package, 2 inches wide, sealed).

Absorbent cotton (sterile).

Safety pins.

Blunt scissors.

Sterile finger dressings (1 package).

Sterile compress dressings for small cuts (1 package).

Adhesive tape (1 roll, 1 inch wide).

MISCELLANEOUS NECESSITIES

Flashlight.
Clinical thermometer with case, or preferably two, one for taking temperature by mouth and one for temperature by rectum. If only one is kept on hand, a rectal thermometer is preferable because it is sometimes impossible to take a patient's temperature by mouth.
Wooden toothpicks (1 box).
Teaspoon, measuring.
Medicine glass (graduated).
Medicine dropper.
Eye cup.
Drinking glass.

There are certain articles which are often needed in case of illness, but which are too large to be kept in the medicine cabinet. These things should be stored in a specific place where they can be found quickly in case of need:

Heating pad or hot-water bottle (*do not apply heat unless the doctor prescribes it, particularly in cases of abdominal pain*).
Ice bag.
Fountain syringe (2-quart capacity) with several nozzles of assorted sizes.
Bed pan
Atomizer for spraying nose and throat.
Clean, soft linen and cotton cloth.
Squares of soft flannel.
Rubber sheet.

Headache remedies, laxatives and other proprietary medicines should not be used unless the doctor orders them. There have been serious results from overdoses of such remedies. Self-dosing is never recommended. *A laxative should never be taken in cases of abdominal pain.*

Now that we have checked the necessary items, what have you found besides these things, in your own medicine cabinet? Unlabelled bottles of medicine? Old prescriptions? Cosmetics? Empty bottles and boxes? Poisonous substances? Then have a general clearing out and restocking, and make a monthly check-up as part of your work schedule.

IF YOU MUST BE A NURSE

Most of us are habitual optimists, and as such we rarely plan ahead for illness, so that when it descends on some one in our family, we are quite unprepared.

Unless the illness is serious enough for hospitalization or the services

of a nurse, the homemaker must assume the considerable burden of caring for the patient.*

Disruption of the household and over-fatigue need not result if we know some of the rules—rules which help us to face illness with the calm resourcefulness so necessary and so seldom found.

System and orderly procedure make caring for a sick person less of a burden. The doctor's orders and directions should be outlined in chart form. On this chart the proper time for giving each treatment or medicine is indicated. If the chart is checked each time medicine or treatment is given, it will be a valuable record for the doctor. Housework can be planned with the chart in mind. An alarm clock or timing clock will remind you when it is time for another dose of medicine.

When there is illness in the home, it will probably be necessary to get up about a half hour earlier than usual, so that the patient can be made comfortable and have his breakfast before the rest of the family.

After breakfast, the patient usually likes to rest or read before being made ready for the day. During this time the homemaker can take care of several pressing household duties such as menu planning, ordering, and putting the rooms in order.

Then the patient's room can be tidied, the patient given his bath and settled with whatever books, games or amusements are permitted. If he is well enough to enjoy a radio, be sure it is placed where it is easy for him to turn the controls.

If fruit juices are prescribed by the doctor, be sure that they are fresh and cold. If a generous supply is left at the bedside for "ad lib." drinking, set a container or bowl of ice cubes nearby so that the patient can add them to each glass of fruit juice. A wide-mouthed vacuum bottle will keep ice cubes from melting for a long time.

A bedside table or reading rack is essential to the comfort of the patient. A bell within easy reach gives him the comfort of knowing that you can be summoned should he need anything.

The patient should have his lunch before the rest of the family is served. Afterward, while he is occupied with a visitor, or is taking a nap, you may take a well-earned rest.

A late afternoon freshening up should be part of the patient's schedule, for at this time he is usually weary. A soothing alcohol rub, if prescribed, a reviving toilette, and a straightening up of the bed and room do much for morale. And morale is important in getting well quickly.

*In every household there should be a copy of the book called *Home Hygiene and Care of the Sick*, which has been prepared and is sold by the American Red Cross at local headquarters. This book is an excellent reference for any woman who suddenly must act as a nurse. If possible, enroll in a class in Home Hygiene and Care of the Sick.

After supper, quiet is essential to the patient's welfare, and only soothing visitors should be permitted.

A refreshing wash before bedtime, and a final straightening of the bed, makes the patient comfortable, and after this is done he should be left quietly alone.

Administration of Medicine

Before we leave this subject, there are a few points concerning the administration of medicine which must be remembered:

1. Give medicine only in compliance with the doctor's orders, in the amount and at the time prescribed by him.
2. When measuring medicine, keep your mind fixed on what you are doing.
3. Follow this routine rigidly every time:
   (*a*) *Read the label on the bottle.*
   (*b*) Shake the bottle if the medicine is liquid, in order to mix the contents thoroughly.
   (*c*) Remove the cork and place it upside down on table or shelf to keep it clean.
   (*d*) Hold the medicine glass on a level with the eyes, and hold the bottle label uppermost to avoid soiling the label.
   (*e*) Pour out the dose, measuring exactly.
   (*f*) Wipe the bottle with clean facial tissues.
   (*g*) Replace the cork.
   (*h*) *Read the label on the bottle* again, before giving the patient the medicine.
4. Pills and capsules should be presented to the patient on a saucer or in a teaspoon, never with your fingers.
5. Acids and medicine containing iron should be taken through a glass tube kept for this purpose exclusively.
6. Wash tubes and glasses at once after use and return them to their place in the medicine cabinet.
7. If a dose of medicine is omitted for any reason, give the regular dose at the next regular time. Never increase the dose.

CHAPTER X

HOUSEHOLD EMPLOYEES

If you do all your own housework, or if your household employee is a "perfect jewel," if she cleans with an eye to the corners, cooks with economy and to the king's taste, is good with the children, and generally keeps the machinery of the household well oiled and running smoothly, the chances are that you have no need to read this chapter. And if she has been with you more than two years, and seems happy about the whole thing, you can defer your reading until she is lured away by wedding bells or inherited money.

But the truth is that such jewels are not born, but made. They almost always come to you in the rough, and must be cut and polished before they achieve real value. Polishing takes expert knowledge and plenty of time, patience and understanding. But the finished product is worth it, providing you have selected the rough gem with care.

Thus the recipe for success, to change the metaphor abruptly, begins like the old recipe for rabbit stew: "First catch your rabbit." If you think this is easy, you are quite wrong, because it is still much more difficult to get—and keep—a really good household employee than it is to hire and retain a satisfactory employee in almost any other field. This is unhappily true even in times when there is a countrywide condition of unemployment.

Present Problems

The market for household employees is one of the biggest labor markets in the world, but it is unorganized, unstandardized and has the highest turnover that exists in any field today. A turnover as great as this is wasteful in any system of economy—wasteful for the employer, for the employee and for society as a whole. It can be blamed on four conditions: overwork, underpay, poor living conditions and social stigma. Unpleasant as it is, we must admit that all these conditions are directly or indirectly attributable to us as employers.

It won't do any harm to look for a moment at the picture as it exists today in this country. The 1930 census showed that nearly 2,327,000 workers were in household employment. Women constituted 90.7 per cent of all household employees. Working hours range as high as 70–80

per week. The principle of clear-cut limited hours is scarcely yet recognized in this field, yet in many states there is a law which limits women's work in factory or store to a 44- or a 40-hour week. Wages for household employees are higher in large cities and industrial areas than they are in towns and smaller cities, but on the whole the outlook is a shocking one. A country-wide survey made by the U. S. Bureau of Employment Security in January, 1937, while resulting in rough figures only, showed that weekly wages for general workers "living in" averaged from $2.57 to $8.35. The lowest wages were paid in certain southeastern states and the highest in some of the New England states, in New York and on the west coast.

Generally speaking, wage and hour laws do not apply to domestic employees, but Wisconsin sets a minimum wage and the state of Washington a maximum of 60 hours. No social security is provided at present nor are household employees protected by workmen's compensation. Trade-union organization has made almost no headway in this field. Whatever bargaining power exists between an employment agency and an employee is almost wholly on the side of the agency. The other side of the picture shows that many families with an income of $3000 and over employ household help, whereas few families with smaller incomes can afford to do so.

Solutions

Public-spirited organizations that are giving most of their time and thought to the problems connected with an adequate supply of competent and stable household employees all agree on certain general aspects. They realize that homemakers need helpers and that it is socially important that homes should have competent and reliable workers, as must the office, the store and the factory. In addition, there is a large labor supply of women who need and are seeking jobs. However, these women want and should have jobs that have a better economic and social status, and better living and working conditions than the average household employee has today. To attract the best kind of young women to work in our homes, household employment must be reorganized so that it offers inducement to both young men and young women to take training and become efficient in a vocation that offers both material gain and personal satisfaction. Since any reasonable person can understand this point of view, it is not hard to see why those who have studied the problem thoroughly feel that the first step in securing efficient well-trained household help is to make the household job more attractive and desirable.

Reports that come to interested groups from girls who leave housekeeping jobs show clearly why household employment is unpopular. Wages are not paid regularly or on time. Girls who have made plans for their time off are told summarily at the last minute they will have to change their day to suit their employer's convenience. Long hours of overtime frequently have no compensation in either extra wages or equal time off on another day. Women who are good cooks and good with children may hear no praise for their virtues but much blame because they do not clean well.

Insufficient food is a too frequent cause for complaint. When the parents are dining out, crackers, soup and fruit for the evening meal with the small children are frequently thought to be enough for the girl who has worked hard all day. In many homes the employee is expected to share a room with a child. At the end of her working day she has no place to sit or read or visit with her friends.

That many conditions and attitudes must be changed if household employment is to become an attractive and dignified occupation, has been recognized for some time by a rapidly increasing and expanding number of persons throughout the United States. In 1928 the Women's Bureau of the United States Department of Agriculture, the National Board of the Young Women's Christian Association, and certain private organizations called a conference in Washington to discuss how household employment could be improved as an occupation for women. Out of this conference there developed the National Council on Household Employment which has drawn up Proposals for a Voluntary Agreement in Household Employment, which are given here in part:

Working Agreement: A definite written agreement between employer and employee should be made at the time of employment. It may be signed or unsigned and should be subject to periodic review to meet changing conditions. Such an agreement is based on the following considerations.

Duties: Regular duties shall be clearly defined, based on an analysis of the job to be done within the hour limit agreed upon. A high standard of work shall be expected in return for good wages and satisfactory working conditions.

Hours: 1. *Actual working hours* shall be defined as hours of duty during which the employee is not free to follow her own pursuits.

2. *Total actual working hours* shall not exceed 60 hours within the week. A schedule of less than 60 hours is desirable.

3. *Time on call* is that time when the employee is not free to leave the house, but may rest or follow her own pursuits, being available for emergencies. Two hours on call shall be equivalent to one hour of working time. Overtime may be adjusted by extra time off or extra payment on a per hour basis. Frequent overtime should be avoided.

4. *Time off* shall include two part-time days each week beginning not later than 2 P.M. on weekdays and immediately after the midday meal on Sundays, or one whole day each week, or its equivalent. In the 60-hour week some evenings will be free. Four out of eight holidays shall be given during the year and some adjustment made for church attendance. Free time shall be defined as hours when the employee is free from all responsibility to the employer. Meal time cannot be considered an employee's free time if the telephone must be answered.

Vacation: One week with pay shall be given after one year of service, two weeks with pay after the second year.

Termination of Services: Notice of one week or one week's pay shall be given on termination of service by the employer—one week's notice by the employee.

Wages: For full-time employment the scale of wages will range from the minimum wage for the unskilled worker with a rising scale for increasing skill and experience. We (The National Council on Household Employment) urge fair and adequate wages based on the local Community Council on Household Employment wage scale or comparable to that paid in the local industries. Payment should be made weekly or biweekly on the day due. If the employee wishes a monthly wage, 4⅓ weeks should be calculated as one month.

Living Conditions: Comfortable living conditions include: (1) adequate food; (2) private room or one shared by another employee if necessary; (3) access to bath; (4) adequate heat and light; (5) a place to entertain friends.

The National Council also urges that local councils on household employment shall be organized and that these councils experiment with and include in their community-wide agreement the following:

1. Health certificates for employees in line with state laws for workers handling food.
2. Benefits of accident compensation to employee and employer and the relation of accident insurance to the state system of industrial accident compensation.

3. Sick leave.
4. Good equipment as a time saver, and chosen in relation to skill of workers.

As a result of these recommendations made by the National Council on Household Employment and other developments, local community councils are developing rapidly in many communities throughout the United States and all wide-awake women are affiliating with these groups and helping in this nation-wide movement to improve this important industry. These groups are developing along at least four different lines:

1. A training school for domestic employees.
2. A placement service for graduates.
3. A consultation service for employers, covering all types of household problems.
4. Discussion groups for members.

As the business executive of an important industry, you will want to strengthen this industry in your community by joining your local council, or organizing one if there is none yet developed.

Briefly, then, the responsibilities of employers in establishing better conditions in this particular labor market are: (1) to raise the status of a domestic employee to a position of dignity through decent wages, shorter hours and better working and living conditions, and (2) to establish a better relationship between employer and employee by raising the employee's morale through sympathetic guidance, appreciation of work well done, and dignified and courteous treatment at all times, and (3) to maintain a smoothly run household through careful planning and explanation of work to be done.

On the other hand, the employer has the right to expect a good return on her investment, and she should have a clear picture of what is to be expected from the superior employee.

The first step in engaging an employee is to recognize that even the best will not do all jobs equally well in the beginning, and to decide which jobs you feel are the most important in your home. Perhaps clean corners matter more to you than skillful cooking. Perhaps a "superb little dinner" competently served will make up for dust curls under the davenport. Perhaps you need above all other considerations, intelligent supervision of your children. If you can afford only one helper, select her according to her ability and training in the things that matter most to you. You can take over some of the other responsibilities yourself and train her to do the rest as you wish it done.

Choosing a Household Employee

There are several ways to secure household employees. Of course you will want to interview a number of applicants so that your choice will not be limited. Keep in mind the fact that the placement of any type of worker has become a highly specialized service carried on by trained experts. You may wish to take advantage of a service of this kind, although you may prefer to choose your own employee.

First Source: When your husband needs a new stenographer, he may call a good business school and ask if there are any qualified graduates available. It is now possible for household employers who are busy to call a *training school* for household employees and ask if qualified graduates are available. The training school usually arranges for the employer to interview several of its students at the school and helps to make the selection. The school also will help the homemaker to plan and schedule her work so that the principle of limited hours can be maintained in this field as it is in business. Training schools conducted by the Young Women's Christian Association and Boards of Education are extremely helpful as are those conducted by the Work Projects Administration and National Youth Administration.

Second Source: In every large community there is a branch of the *state employment office* which is making every effort to find jobs for qualified workers, and to find workers for desirable jobs. This office will be glad to take your order for a household employee. You will be asked many questions about the job you want done, but remember that this is done in order to fill your needs satisfactorily. If you wish a young woman under eighteen, the Junior Employment Service will send a representative into your home to help you understand the needs of the girl who will remain under their supervision. You will find such representatives very helpful.

Third Source: There are a great many private *agencies* under the Young Women's Christian Association and similar organizations. There are also commercial agencies some of which are thoroughly reliable and successful. There are other commercial agencies which charge high fees to both the employer and the employee. It is necessary to discriminate among these different agencies.

Fourth Source: Many employers find excellent household employees through *personal contacts.* Your postman or your grocer knows your community well and often understands your needs. There may be a household employee next door who has a sister or a friend looking for a job. Such personal contacts often afford the easiest and happiest way to pick out new employees, especially if you yourself know what you

want and understand how to select the employee who will best fit into your household.

Fifth Source: Newspaper advertisements are a frequent source used for finding household employees—either by watching the advertisements put in by workers looking for a job or by inserting an advertisement of your own in a local paper.

A newspaper ad should be worded carefully to give a picture of the job you have to offer, if it is to attract the kind of employee you desire. For example: "General houseworker, full time, live in. Business couple, 1 child nursery school mornings, 5-room bungalow, plain cooking, heavy laundry sent out, private room. Telephone Bayville 7089 for appointment." By indicating the size of the family and of the house, the kind of cooking and laundry work required, whether the job is "live in" or not and if so whether the employee will have her own room, you will be saved the annoyance of interviewing applicants looking for another type of job.

You can save yourself time and the applicant carfare by a first interview on the phone. Find out the applicant's main qualifications, her experience and something of her references. If these seem satisfactory, arrange a time for a personal interview. Give her directions for reaching your home. It will be wise for you and only fair to the applicants to keep the position open until you have seen all with whom you have made appointments.

The employer should make the personal interview an informal and friendly chat. The applicant should be comfortably seated. During the interview the employer should learn about the applicant:

1. Her name, nationality, address and telephone number.
2. Her interest and abilities in the jobs you have decided are most important.
3. Her general attitude toward household employment.
4. Where she worked formerly, her attitude toward her former employer, references.*
5. Her general health, whether she is susceptible to colds or other recurrent illness, and whether she is willing to have a health examination made by a reputable, well-known physician of her own choice at your expense.
6. The hours she keeps.

*Never take references at their face value, but always check them as carefully as possible.

7. Her personal characteristics, judged by general conversation not related to the job and concerned with:
   - Outside interests
   - How long she has lived in vicinity
   - Church affiliation
   - Responsibility toward her family
   - Capacity for constructive contact with children
   - Disposition
   - Manner of speaking

It is only fair that you should give the applicant the following information:

1. Size of house and family. (It is wise to have children and applicant meet and to show applicant through the house.)

2. Profession of employer, general home life, religion.

3. Type of work to be done and kind of equipment to do it with. Whether uniforms are provided or not. Schedule of work and responsibility expected of employee.

4. Hours required (daily and weekly), time off, overtime, special adjustments for holidays, time for church, etc., and vacations.

5. Wages—whether maximum is paid or an increase can be expected. Day or date on which payments will be made.

6. Rules on use of telephone and entertainment of friends.

7. Whether job is permanent or temporary. (Employer and employee should agree on a trial period.)

8. Status of employee in the home.

9. If employee is to live in, show her her toilet and bathing facilities and explain types of meals. These are all part of her pay.

When you have decided on the employee who best meets your needs and have checked her references, it is time to draw up an informal working agreement in writing which may be signed by both of you before she is employed (page 111). One such agreement which has proved successful in the home of a business couple with one child, is given here:

A Sample Working Agreement Between Household Employer and Employee

Status of Employee in the Home. We consider your job of utmost importance to the happiness and welfare of our family. You will be given the same courtesy and respect that an office employee has in her job.

Duties. Your duties will be limited to cooking, serving, cleaning, light laundry, care of the child, answering the door and telephone. No heavy laundry is required. The care of the child will be your first duty when she is out of school and the parents are not at home. You will have no responsibility for her when the parents are at home.

Hours. You may have every Thursday off after 1 P.M. until the following morning and every Sunday after 3 P.M. If at any time it is necessary to request you to stay on duty on Thursday or Sunday afternoon you will be given equivalent free time on another day or paid extra for that time. You will be expected to stay in two evenings a week with the child when we are out, but you may entertain friends quietly on those occasions.

Breakfast is served every morning at ..... o'clock.

Lunch is served for the child at ..... o'clock.

Dinner is served every evening at ..... o'clock.

You will be free in the evenings after the dinner dishes are done.

We shall work out a household schedule so that you may have some free time for yourself in the early afternoon.

Vacation. One week with pay shall be given you after one year of service, two weeks with pay after the second year.

Termination of Service. Notice of one week or one week's pay shall be given on termination of service. We request you to give us one week's notice if you wish to leave.

Wages. Wages totalling $..... per month will be paid in 2 installments on the 1st and 15th of every month.

Uniforms. We furnish uniforms because they give greater dignity to your position. Those with short sleeves are worn during the day and those with long sleeves for serving dinner. Time for laundering uniforms is included in your work schedule.

Personal Appearance. Neat uniforms, clean fingernails, tidy hair and well cared for shoes and hose make you as well groomed as the woman in the office. We expect you to maintain these standards.

Your Room. We have tried to make your own room attractive and comfortable, and your privacy in it will be respected. It must be given the same routine daily and weekly care that you give the rest of the

house. Time for this work is provided for in the housework schedule.

Entertaining Friends. You may entertain your women friends in your room. If you wish to entertain a beau, we can make satisfactory arrangements if you will tell me in advance.

Housework Schedule. After you have become used to the household we will make out a housework schedule together so that we shall both have a clear idea of what can be accomplished each day.

Criticism. Since no two people do things exactly alike, there may be times when we shall request you to do something differently from the way some one else has wanted you to do it. On the other hand, if you have suggestions about changes that seem desirable to you, we shall be glad to discuss them with you.

The suggestions of the National Council on Household Employment for a voluntary working agreement between employer and employee may be secured by writing to that organization in Haverford, Pa.

Schedules Again

Clearly and briefly worded work schedules worked out jointly by employer and employee are an invaluable help in maintaining a well-run home. Written schedules are best. However, any schedule that is too complicated, too rigid or too demanding will never be successful, particularly if the employee is expected to take care of the children in addition to her other work. Neither will a schedule work if the employer or members of the family are in the habit of constantly interrupting it with other demands. And it is certainly unfair to find extra work for an employee who is able to get through her schedule with a little time left over, if she does the work well.

No one schedule can fit every home. The size of the house, the kind of furnishings, the number and ages of the family members, their interests and activities, and the amount of help, either from family members, from hired help or outside servants, all have to be considered in any work plan that can be made. The schedule for your own home must be worked out according to prevailing conditions.

An exchange of work is sometimes made between homemaker and helper, when special plans may be facilitated in this way. When a broad outline is used in partnership with detailed directions for jobs to be done, such as those on pages 230–254, the results are usually most satisfactory, particularly if the homemaker has spent enough time with the employee in the beginning, showing her how each type of work is most easily and quickly done, and acquainting her with the equipment for cleaning, cooking, laundering, etc., which is available.

Training Period

During this phase you are the teacher and it is a good idea to remember that successful teachers are fair-minded, patient, courteous, cordial, friendly but not familiar, and never given to indiscriminate scolding, spoiling or overindulgence. They themselves are not free to indulge in displays of nerves or temper. They administer any justified reprimands quietly and in private. They encourage their pupils and show their appreciation of good work. And naturally they know how to do the work they expect their pupils to do, and can demonstrate by doing it, as well as explaining it clearly. They know that the battle is half won if they can create a desire for knowledge, and they realize the value of patient repetition in teaching—especially by showing, not by saying. The homemaker who can meet these standards is not the homemaker who wrings her hands and wails over "the servant problem."

In addition to knowing how to do a job, you should know approximately how long it takes or it will not be possible to plan a reasonable work schedule for your employee. Then, too, you must make allowance for the probability that she may not be able, at first, to accomplish each job as rapidly as you can, because of lack of practice and unfamiliarity with your equipment. Also, different people work at different speeds.

On the first few days of her new job you should plan to stay at home. A new girl adjusts more quickly to your household if you are there to answer questions. Show her where things are kept, watch the way she does her work (as unobtrusively as possible), give her any necessary instructions (but beware of an overdose), and make a list of the jobs in which she shows lack of training. Set the time for a regular daily conference in which plans are made together, and problems concerning the management of the home are discussed. *Never omit this conference.*

Preface all criticism with praise for something she has done right. The training school and employment managers are unanimous in warning employers to be more careful about criticism. Many women, they say, who are the soul of tact with their families and friends, seem to think it is an unnecessary requirement in relations with the household employee. Don't criticize the soufflé during dinner or rush out immediately after and tell her bluntly that it was awful. Go to the kitchen after dinner and tell her that the dinner was very nice, but you think the soufflé needed a little lower temperature.

From this point on, training should progress gradually, taking first things first in their order of importance to you, until the polishing process is complete, and you have a "perfect jewel" of your own. Never

relax standards, maintain the friendly dignity of the employer-employee relationship and never discuss your personal problems.

Cooking as You Like It

Since cooking plays such a large part in general housework, a discussion of training in this art deserves considerable space. The following eight points cover the field adequately:

1. *Teach your employee the 5 points* that make good cooking easy:
   (*a*) Use tested recipes.
   (*b*) Read them carefully.
   (*c*) Measure ingredients accurately.
   (*d*) Control the temperature.
   (*e*) Watch the time.

2. *Consider the girl's education.* How well does she read? This sounds simple, but her days in school may have been short. Have her read a recipe, then tell you what ingredients she'll need, what temperature is required and how long the product will cook. In this way you'll learn how much help she needs in understanding a new recipe and you can also point out to her important features of a recipe to be considered before starting to follow it.

Check her arithmetic. If the roast weighs 4 pounds and should cook 20 minutes per pound, how long will it be in the oven? And how do you figure 80 minutes by the clock? If dinner is to be served at 7, what time will she put it in? If these problems are complicated for her you'll need to leave written instructions on these points in the kitchen every day until she learns. Be kind, go slow, and keep your sense of humor.

3. *Give her efficient equipment.* Be sure that the recipes you give her are reliable. Make one cook book or one recipe file her standard. How is your measuring equipment? Fats and liquids are easily measured in glass measuring cups. Measuring cups marked off clearly for fractional parts simplify the measurement of dry ingredients. Measuring spoons that are clipped together save searching through the kitchen drawer for the right one.

Modern ovens have temperature controls. If you've any doubt of the accuracy of yours, the home service department of the gas or electric company will be glad to check it for you. Oven thermometers can be purchased for use in any oven without an automatic heat control. Meat

thermometers are the most accurate means of getting the proper degree of doneness in meats. Thermometers for deep fat frying and sugar cookery are added insurance against failures for the amateur cook.

Kitchen clocks range from ordinary alarm clocks to those that are a part of the very modern stove. Have your employee understand that in cooking clock-watching very definitely is a part of the job.

Do your pots and pans fit your recipes? Neither you nor your employee is encouraged by a thin flat cake baked in a pan too large for it. A small quantity of food cooked in the bottom of a large pan is quickly burned, while too much food in a pan too small may boil over.

4. *Put time and temperature charts up on the kitchen wall.* Excellent charts are available that give the time and temperature necessary for the proper cooking of different foodstuffs. Another one shows whether a vegetable is best cooked with much or little water, whether the pan should be covered or uncovered, and the approximate time needed to develop the flavor without losing the precious vitamins and minerals. Put these up by the kitchen stove in an easy to read location. But remember that tabulated figures are hard to read and that the employee may be slower at reading than you are. Proportion charts for making white sauces, cooked breakfast cereals, and your favorite salad dressings can be copied from the cook book on your typewriter and pasted inside the door of the cupboard where ingredients for these recipes are stored.

5. *Build the girl's confidence in herself.* With efficient equipment and reliable sign posts, the next step is to establish her confidence in using and following them.

Start her on simple tasks first. As she succeeds in these, her confidence will grow.

Do you cut string beans and carrots crosswise or do you like your carrots in thin strips and your beans Frenched? Show her how to clean and cut vegetables to suit you, then type the directions on cards and give them to her.

Salad arrangements are easy but important. Teach her these and how to make your favorite dressings and then make salads her responsibility entirely. Cooking vegetables and cereals might come next, then meats and simple desserts.

A little praise goes a long way, a lot works wonders, and words from masculine lips help especially. But be sincere—don't overdo it.

6. *Make generous use of partly prepared foods on the market.* Biscuits, pie crust, gingerbread, cakes, puddings and frozen dessert mix-

tures are practically fool-proof and in honest truth many of them are just as good as—we dare not say better than—mother used to make. Using them gives the employee practice in manipulation and a "feel" for the proper texture of the different products before cooking. It's that "feel" of the dough or batter that has been the guide of many cooks to perfect products for ages.

7. *Help her plan time and order of work for each meal.* After she is fairly confident about following separate recipes, getting everything in a meal ready to serve at the same time is the inexperienced cook's greatest trial. If you sit down with the girl and plan the order of work with her for a few meals, she will speedily lose her fear of a last-minute flurry.

While you are giving her this help, you can emphasize the importance of assembling all the foods and equipment needed for any one recipe before starting to follow it. Again, *show* her what you mean.

Getting food ingredients together before she starts measuring eliminates any chance of leaving one essential out—baking powder out of a cake, for instance. Having the equipment at hand insures smooth procedure in combining ingredients properly. If she learns to stack utensils and wipe off her work surfaces as she finishes each job, her kitchen will keep a semblance of order which makes last-minute serving tasks much easier.

8. *Give her everyday practice on company menus.* One plan for the untrained cook is to get her to perfect herself in three dinner menus, labelling them A, B and C. By the time a guest has been entertained three times, weeks have elapsed since he has eaten dinner A. You can count on his having forgotten it and serve it again!

If your employee is well schooled in Dinners A, B and C, you can entertain your guests in the living room, quite happily secure in the knowledge that things will run smoothly in the kitchen. Your unruffled calm will be the envy of your friends who have not learned to teach their employees to take the full responsibility of meal preparation and service.

Teaching Her to Serve

Fine table service is appreciated equally by the employer and employee. Serving courses are the most popular ones in the household training schools and many homemakers measure an employee's training by the skill with which she serves a meal.

In the one-employee household, especially where there are children,

serving should be reduced to its easiest terms. Simple menus, correctly served, are more satisfactory than elaborate dinners served by an obviously flustered worker.

Learning to serve even in the simplest manner, however, is not easy for the completely untrained girl. Homemaking teachers say that it is hard to teach girls to serve quickly, quietly and without waste motion. Deft service requires good muscular coordination and, like expert dancing, swimming, tennis and golf, is achieved only by practicing the right methods over and over. If your employee has had any experience or training at all in serving, let her serve her first meal the way that she is accustomed to doing it. You may want to request changes. Make mental notes of your corrections but don't give them to her until after dinner. Then go into the kitchen with a word of praise for food or service *before* you make your criticisms.

If she has never had any experience in serving, you may be wise to have a rehearsal with just you two. Set the table for one. Tell her how you want food served and show her. Then sit down at the place and let her practice serving you. Keep your everyday service as nearly as possible what you expect for company. Daily practice will make her serene and sure when you have guests.

One woman of our acquaintance keeps a diagram of the place-settings for each course pasted on the kitchen side of the dining room door. It is always in plain sight as reference and reminder. The same woman has photographs from magazines pasted on recipe file cards which show the employee exactly how a breakfast tray, tea table and after-dinner coffee service should look.

Written instructions help some girls; others find them formidable. You'll have to judge your employee.

While teaching her service, be sure to impress her with the great importance of having the children's food look attractive when it is set before them. When one sees the sloppy, careless kitchen service some children endure, one does not wonder why they become feeding problems.

Teaching Her to Clean

Some women are orderly housekeepers but never get into the corners or worry about special care of woodwork and windows, armchairs and andirons. Others are so vigorous about cleaning things that they keep their houses in a fine state of disorder all the time. Obviously the happy medium is desirable but your employee may go to one extreme while you lean toward the other. You'll have to decide what your cleaning

standards are. Then estimate the amount of time it takes to do each job, and remember that the employee may not do it as fast as you would yourself. Then you'll have some idea how much total time it takes to do the cleaning you require. Ask the girl to time herself and let you know whether she needs more or less time.

If she is quick, be careful not to penalize her by adding more work. Rather let her have that extra time for herself. Such consideration on your part will pay better dividends in her attitude toward her job than the extra work would be worth.

As in teaching her to cook and to launder, you'll get best results by showing her how you want things done if her own way does not suit you. Here again typewritten instructions are important.

The use of your particular kind of vacuum cleaner is most important. One business woman of our acquaintance gave her employee a new cleaner without a word of explanation. Two weeks later she thought to ask the girl how she liked the cleaner. Lydia's doubtful comment was, "Well, it shore do stir up the dust." Investigation revealed that the cleaner had been used without the bag attached!

Any girl will save time and do a more thorough cleaning job if she learns how to handle your cleaner and its attachments skillfully.

Sewing

Not much sewing should be expected of the general houseworker. This falls in the realm of personal service, and not housework. In an emergency, a button may be sewed on or a ripped seam mended, but if you insist on a great deal of sewing it is only fair that you take over other tasks of cleaning, cooking or laundering. If the employee is especially skilled in sewing such an exchange may be desirable.

Teaching Her to Launder

Any employment agency will tell you that it is usually easier to get and keep a household employee if you send your laundry out, or have a laundress come in. Some employees, however, are expert laundresses who have entered housework to get more steady employment. Experienced homemakers will tell you that if the employee does the washing and ironing, the homemaker must assume a major share of the other housekeeping jobs on laundry days.

In most homes there is light laundry to do occasionally. If you provide the proper mild soap for your fine lingerie and other silks, rayons and woolens, you'll be sure that the soap won't harm them. Then

you'll want to be sure that your employee knows the proper temperature of the water for these fabrics (better buy her a thermometer), the proper methods of squeezing suds gently through them instead of too vigorous rubbing and wringing, the standards for proper rinsing and when to roll in a towel and when to hang things out to dry. She must understand the thermostat dial on your iron so that after fabrics have been washed carefully they will not be ruined in the ironing.

The only way to teach her these things is to go through the process with her, show her what you mean and then give her simple typewritten instructions to follow on later occasions. Don't expect her to remember too much.

Clothes last longer and come cleaner if the laundress understands the use of different kinds of soap, when and what to blue and bleach, the effect of different temperatures of water and iron upon different kinds of fabrics. You will find detailed directions for washing and ironing on pages 261–305, and with this help it should be easy to show your employee the right way to launder clothes.

Teaching Her Child Care

If care of your children is to be an important part of your maid's duties, you will want her to have good health, a good disposition, ability to meet emergencies without going to pieces, and a willingness to cooperate with your ideas of discipline.

The only way to be sure of her health is to ask her to have a physical examination made by a reputable well-known doctor of her own choosing, and to pay for it yourself.

Her disposition may depend upon you. Underpaid, underappreciated and overworked employees will not be happy ones and may vent their frustration on your children.

Children very quickly reflect the attitude of the rest of the family toward an employee. If her discipline is to be effective, they must understand that she is a person of some consequence. Give the employee a working idea of your methods of discipline and never disagree with her about her methods in front of the child. Have a conference later when the child is not present.

Employees whose emotional make-up is such that they go to pieces in a crisis may do much harm in frightening young children when calm reassurance is required. If she isn't able to overcome this fault, on the next occasion you'd better look for a more emotionally stable employee.

If your employee assumes most of the responsibility for the children don't expect too much else of her. She can't do everything. Careful research has determined that baby care with approved modern routine requires from 5 to 7 hours daily. The needs of pre-school children past the year-old mark are so unpredictable that it is almost impossible, as you yourself know, to follow a housekeeping schedule very closely.

If your employee is to assume care of a baby and has not had experience before, you'll be wise to take her with you on your regular visits to the pediatrician. She'll feel her responsibility for carrying out the doctor's instructions more keenly if she hears him give them. Government bulletins on infant care will be of much help to her.

Miscellaneous Problems

Should a household employee be allowed to smoke? During her rest hours, hours off duty and in her own room, yes. In the kitchen or on duty, no. If the helper does not "live in," a place should be provided for her to change her clothes, rest and smoke if she wishes to do so.

Is it wiser to employ a young girl or an older woman? This depends on you. Experience has proved that in general an older woman is more dependable and responsible, but usually likes to do things her own way and resents schedules, while a young girl must be trained by you at considerable cost in time, but will be agreeable about learning to do things your way. Beaux must be expected and it is only fair to provide a place where they may be entertained, with your express permission in advance each time.

How many uniforms are necessary? If you expect your employee to be well groomed at all times, she should be provided with four cotton uniforms for morning wear and at least two long-sleeved uniforms of silk, rayon or cotton broadcloth for afternoon wear and serving. A sheer apron, collars and cuffs and cap are worn with the long-sleeved uniform. In fairness to her, the uniforms should be well styled and comfortable. Low-heeled, comfortable shoes in good repair are required, at her expense, but the employer provides the uniforms.

Part-Time Help

Many women seem to think that unless they hire help for at least a half-day it isn't worth while, either to them or the person employed. Yet the wise use of occasional help can provide a safety margin between normal housework fatigue and "overdoing." The overdoing is a costly

experience about which most housekeepers know altogether too much.

Every community offers part-time help possibilities. To be sure, it takes some looking around, some discouraging experiences, before arriving at just the persons who fit one's own situation. Yet with many women it means a great deal to be able to have some of the heaviest work done, without bankrupting the budget.

In one homemaker's experience, three different persons, used for short times for different types of work, have solved the part-time help problem very nicely. The first was an elderly Negro houseman who worked by the hour anywhere she wished to put him—washing floors, woodwork or windows, sweeping, dusting or moving furniture.

For dinner parties a second type of part-time help was found invaluable—a girl who had been excellently trained for parties by her college home economics course and who would come to serve and clean up afterward. She would also come a little early to help with the last-minute cooking. With such a girl in the kitchen for two hours, one can be hostess throughout the meal instead of combined waitress-hostess, with conversation constantly interrupted by absences from the room.

A third type of help was a high school girl who came on washday. While the mistress of the house started the washing, the girl straightened the house and did the breakfast dishes. Then she hung up the clothes as they were washed and later ironed a few of the partially dried plain pieces. On a busy Monday even this much assistance was a great lift and cost only a small sum.

To locate these and other types of part-time help a home maker can call upon her local welfare boards which are always in touch with families whose different members want odd-job work, and the local college and high schools which often maintain a list of students who are anxious to make some spending money. Municipal employment agencies also carry names of persons available for part-time help. The careful selection and use of such help for special occasions repays the homemaker many times in peace of mind or relief from fatigue, and also provides employment where it is much needed. Of course wages by the hour for broken time should be somewhat higher than the hourly pay for a full day.

Trained Help

If you are too busy to spend any time in training household helpers, you are faced with a difficult problem unless you are fortunate enough to have a training center in your community. At the present time there

are many W. P. A. Training Centers in various sections of the country, which are doing a splendid job of thorough training. Public vocational schools are entering this field and the Y. W. C. A. also offers a training course for domestic workers in many cities. In some large cities private agencies specialize in this work, and employers may send their employees to be trained for a reasonable fee.

If no training center has been established nearby, why not consider working toward this objective, as a worthy project for a club or community group? With sufficient encouragement and backing, it should be comparatively easy to interest the local Board of Education in this idea, and to get such a training center established in your midst. This will be of real value to young unemployed men and women and it will also be of great help to the homemakers of your community who need trained and competent workers.

PART II

HOUSEKEEPING METHODS

SECTION ONE

Care of the House

CHAPTER XI

TOOLS FOR HOUSECLEANING TASKS

Housecleaning can be brisk, efficient and stimulating, or it can be grim and time-consuming. Much depends on the tools at hand—the more efficient the tools, the faster the work. And of course the results will be better, too.

On pages 140–142 you will find a list of cleaning equipment and materials. Each essential item is starred—the rest can be added when the budget permits.

Cleaning tools are good servants only when they receive proper care. A vacuum cleaner lags on the job when the dust bag is clogged with dirt; a soiled duster or mop is little better than none at all; and a carpet sweeper can't pick up surface dirt if its brush is snarled with lint and hairs, if the dust pans are filled to overflowing, or if the bristles are worn too short to touch the carpet. A few minutes a day spent in caring for equipment will pay good dividends in service.

The Vacuum Cleaner

A. *Use*

1. Adjust the nozzle to rug or floor unless adjustment is automatic. To test for correct adjustment, place the cleaner on the rug with the handle in operating position. Turn on the motor. The rug should be lifted to the nozzle by suction and held there firmly. When an agitator type cleaner is used, the carpet or rug will vibrate if the nozzle is properly adjusted. This vibration can be felt if one's hand is placed on the carpet just in front of the nozzle.
2. Operate the cleaner *slowly* in a straight line, lengthwise of the rug.

Go over each section at least twice to remove embedded dirt and grit.

3. Keep the cord out of the way, releasing only the length actually required, to avoid tangling with lamp cords, etc., and possible damage to the cleaner cord itself.
4. Familiarize yourself with the attachments and their uses. Once you discover how easy it is to attach them and how many tasks they make easy, there will be no danger of their becoming a poor investment through lack of use.

B. *Care*

1. Pick up pins, hairpins, tacks and any small sharp objects before using the vacuum cleaner. They may cut the belt of a motor-driven brush or agitator cleaner, or they may puncture the dust bag.
2. Empty the dust bag *after each use* (suction action is lessened by dirt in the bag). Shake the dirt into a deep waste basket lined with a paper bag, to avoid scattering dust. Every three months, turn the dust bag inside out, after emptying it, and brush the inside thoroughly. Never wash the bag because this destroys the dust-proof finish. Certain manufacturers provide disposable paper liners for the dust bag. These are emptied after each use, and disposed of when worn. Five liners constitute a year's supply. They protect the cloth bag and do away with the necessity for cleaning it.
3. Remove the revolving cylinder and brushes, from a motor-driven brush cleaner once a week. Remove all threads and hairs.
4. Wind the cord *loosely* to avoid damaging the fine wires inside. Replace worn cords immediately (page 102). Turn off the current before pulling out the plug, or contacts may be burned.
5. Follow the manufacturer's directions for lubrication of motor-driven brush or agitator cleaners. Overlubrication is as harmful to the motor as lack of lubrication.
6. Replace the belt and brush of motor-driven brush or agitator cleaners before they are badly worn.
7. Dust the motor housing and handle after each use.
8. Keep all attachments clean.

The Carpet Sweeper

A. *Use*

Run the carpet sweeper *smoothly and quickly* back and forth, over the surface of the rug or carpet, without using more pressure than is

necessary. Certain carpet sweepers have a brush control which adjusts automatically to rugs and carpets of varying thickness.

B. *Care*

1. Empty the dust pan after each use. A clogged sweeper will not pick up dust and litter.
2. Take out the brush and clean it at least once a week. A matted tangled brush cannot sweep efficiently. Cut threads, hair, etc., and remove them with a cleaning tool provided by the manufacturer, or a metal comb. If the bristles are sticky, clean them with carbon tetrachloride. Replace the brush when it is worn down.
3. Oil the sweeper according to the manufacturer's directions.
4. Dust the outside and handle after each use.

Hand Applicators for Floor Wax

A. *Use*

Smooth the wax on in a thin coat using straight even strokes, in one direction only.

B. *Care*

1. Wash *immediately* after each use before the wax hardens.
   (*a*) Use warm soapsuds to remove wax.
   (*b*) Rinse in lukewarm water until water is clear.
   (*c*) Dry at room temperature. Shake several times during drying.
2. Hang the applicator in the cleaning closet. Never allow the pad to rest on the floor.

Corn and Fiber Brooms

A. *Use*

Sweep evenly in one direction only, keeping the broom on the rug or carpet to avoid raising too much dust. Overlap the strokes.

B. *Care*

1. Always hang up a broom. Never let the bristles rest on the floor.
2. Dip fiber brooms (not corn brooms) in clear water once a week and hang up to dry. This prevents brittleness and curling.
3. Wash fiber brooms (not corn brooms) if badly soiled, in mild lukewarm soapsuds. Rinse thoroughly in clear lukewarm water and hang up to dry.
4. Dust corn brooms with a dry cloth after each use.

Dust Mops

A. *Use*

Run the dust mop over the surface without raising it from the floor, in order to avoid scattering dust.

B. *Care*

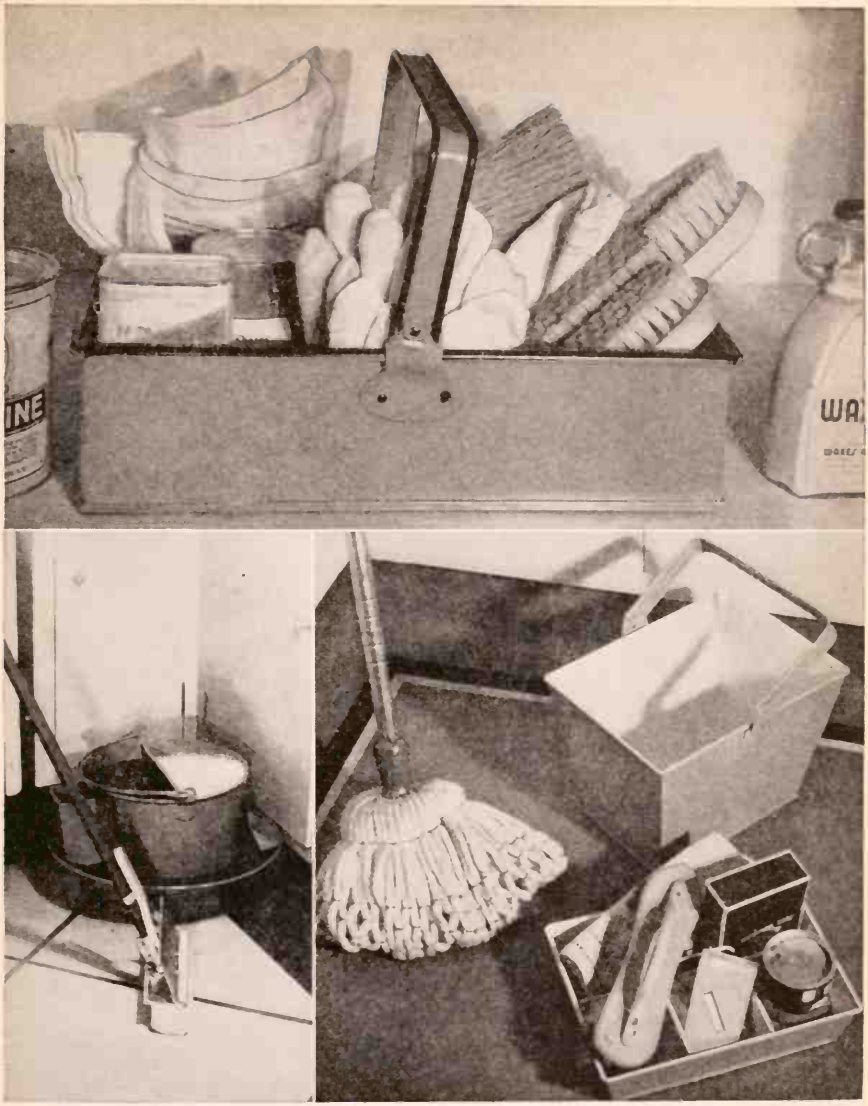
1. Always hang up mops. Never let the heads rest on the floor.
2. Always clean a dust mop after each use. The best way is to use the suction tool attachment of the vacuum cleaner. If this is not possible the mop should be shaken free of dust. If you live in the country it is your privilege to shake the mop out of doors, but in cities and suburbs this is unfair to neighbors. Shake the mop into a large paper bag instead of out the window. (The practice of using a vacuum cleaner for a preliminary dusting of bare floors is a good one. When this is done, the dust mop never gets very dirty.)
3. Wash dust mops frequently in a pail or laundry tray.
   (*a*) Use mild lukewarm suds. If the mop is very dirty wash it twice or more, using fresh suds each time.
   (*b*) Rinse in lukewarm water until the water is clear.
   (*c*) Shake out thoroughly until fluffy.
   (*d*) Dry out of doors in warm weather or at room temperature.
   (*e*) Treated mops may be dipped in the solution used for making treated dusters (page 136).

Wet Mops

1. *String mops* should be washed in hot soapsuds, rinsed and shaken to separate strings. Dry in the sun if possible. Never put the mop away while it is wet or damp.
2. *Sponge Rubber mops:* Wash the sponge in warm soapsuds, rinse thoroughly, replace in handle and remove excess water with the squeegee lever.
3. *Cellulose Sponge mops:* (see care of cellulose sponges, page 137).

Scrub Brushes

1. Wash in warm soapsuds after each use, until bristles are clean.
2. Rinse thoroughly in clear warm water.
3. Let dry, bristles down, at room temperature, or outdoors in the sun.
4. Never put away until completely dry.



Photographs by William H. Zerbe and Patricia Hall

Top: Make room in your cleaning cabinet for a basket to hold the supplies you need in cleaning room by room.

Lower left: A cellulose sponge mop with a long handle and a two-compartment pail make floor washing easy.

Lower right: This pail has a tray top which holds cleaning supplies.

Hair or Nylon Brooms and Brushes

1. Wash in lukewarm suds made with *mild* soap.
2. Rinse thoroughly with clear lukewarm water.
3. Shake to remove excess water.
4. Hang up to dry.
5. Shake several times during drying.
6. Brush or comb bristles into original shape.

Note: Matted or crushed brushes can be renovated with a little patience. Wash them in the way described above. While they are wet use a coarse comb and untangle a few bristles at a time, beginning at the outer edge and working in toward the backing. Use a finer comb to restore original shape. Hang up to dry.

Dusting and Polishing Cloths

A. *Use*

Gather the dust *into* the cloth to avoid scattering it.

B. *Care*

1. *Dustcloths*
   (*a*) When soiled wash in warm soapsuds; rinse thoroughly in clear lukewarm water. Dry.
   (*b*) Dip in lemon oil solution (below). Re-dry.
   (*c*) Store in tightly covered metal box (page 88).

Treated Dusters

1 pint hot water ¼ cup lemon oil

Combine hot water and lemon oil. Dip 4–5 cheesecloth squares (20″ x 20″) in solution. Press solution through cloth thoroughly. Squeeze out all excess moisture. Dry thoroughly.

2. *Polishing cloths*

   Wash after each use in warm soapsuds; rinse thoroughly in clear lukewarm water. Dry before putting away.

3. *Chamois*

   Wash like chamois gloves (page 293).

4. *Floor cloths*

   Wash in hot soapsuds; rinse thoroughly in hot water. Use a good commercial chlorine bleach frequently, according to directions on the bottle. Dry out of doors if possible.

Cellulose Sponges

1. Wash after each use in warm soapsuds; rinse thoroughly; squeeze out excess water or put through wringer; do not twist.
2. These sponges may be sterilized in boiling water if necessary.

Rubber and Synthetic Rubber Gloves

1. Always have two pairs.
2. Never allow genuine rubber gloves to remain in cleaning fluid or acid or alkaline solutions longer than half an hour. At the end of this time, change to another pair to continue work.
3. Soak used gloves in tepid soapsuds 10–20 minutes; rinse thoroughly in clear tepid water; hang up to dry. Sprinkle inside with talcum powder. Never put away until thoroughly dry.
4. Store genuine rubber gloves in a cool dark place.
5. The new synthetic rubber gloves are not affected by solutions that injure genuine rubber. They hold their shape and may be stored in any convenient place.

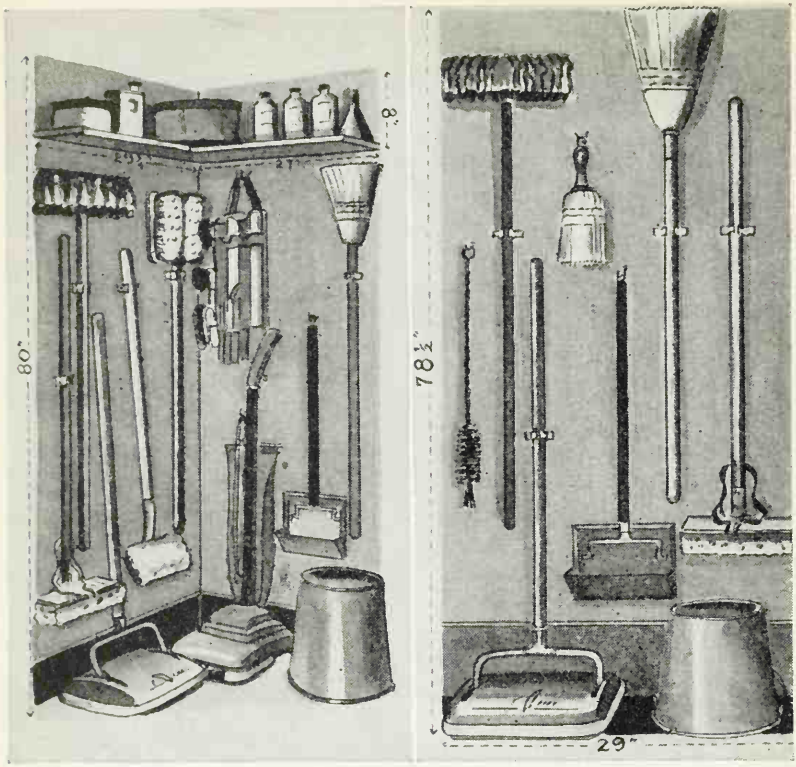
Storage of Cleaning Equipment

One item that is generally overlooked in both house plans and apartment layouts is space to store cleaning equipment. Notice that we do not even say "adequate" space, because in most cases there isn't even a minimum space provided for this specific purpose!

Mops and brooms behind doors, the vacuum cleaner in the hall closet, dusters and polishing cloths tucked away in odd corners—such haphazard storage is the general rule, even though it means hundreds of extra steps and a great deal of petty annoyance.

Perhaps you have always accepted this state of affairs, with definite irritation, to be sure, but have never actually given much thought to a satisfactory solution.

A careful scrutiny of floor and wall space will lead to ideas, no matter how hopeless the situation may seem at first glance. On page 138 we illustrate what can be done if you can find wall space 29 inches wide and 78½ inches high, plus one shelf and one drawer in another



Drawing by Effa Brown

Left: Cleaning equipment can be stored compactly and conveniently in a corner wall space.

Right: This wall space, plus one shelf and one drawer in another location, provides for minimum cleaning equipment.

location. This is not ideal, but is a great improvement over half a dozen odd storage places.

If you can find a corner space, so much the better, as we have shown above. And on the next page we have designed an ideal storage closet for cleaning equipment which you may be able to build in otherwise unused space.

Often there is an extra clothes closet on the first floor which is used for haphazard storage, and which might well be transformed into an adequate cleaning closet. Shallow shelves down one side, a shelf running the width of the closet within easy reach, clips for holding brooms,

Drawing by Effa Brown

If unused space can be found, an ideal cleaning closet can be constructed according to this plan.

mops, etc. on the remaining wall space, a shoe bag with pockets on the door, for holding dusters, floor space for the vacuum cleaner, carpet sweeper and pail—and you have an orderly, efficient cleaning closet.

Of course problems vary, and it is possible that no one of our plans will work for you. However, if you can find any space at all, you can, with a little patience, work out a satisfactory storage place. First, collect all your cleaning tools and materials at the location you think may do. Then, with the help of a second person and a piece of chalk, work out the best plan for utilizing every bit of wall and floor space. First, set the tools that require floor space, such as the vacuum cleaner, carpet sweeper and pail, in position. Now collect the tools that are to be clipped to the wall—broom, dust mop, wax applicator, etc. Have your

helper hold these in position while you outline them in chalk, which can be erased if you discover a better arrangement (our plans on pages 138 and 139 will give you ideas). Be sure to place the tools that are used most often in the most accessible positions.

An hour or so spent in planning and working out storage space will be remarkably worth your while, and you will wonder why you didn't do it long ago.

Cleaning Equipment

Large Equipment	*Where to Store*
*Vacuum cleaner and attachments	Cleaning closet
Hand-type vacuum cleaner	Cleaning closet
*Carpet sweeper	Cleaning closet
*Applicator for floor wax	Cleaning closet
Weighted floor polisher or electric polisher	Cleaning closet
Brooms, Mops, etc.	
1 soft bristle or hair broom	Cleaning closet
*1 corn or fiber broom	Cleaning closet
*1 dust mop	Cleaning closet
*1 wet mop (string, sponge rubber or cellulose sponge) and 2-compartment pail	Cleaning closet
*1 scrub brush (long handle preferred)	Cleaning closet
*1 dust pan (long handle preferred)	Cleaning closet
1 dust pan brush (long handle preferred)	Cleaning closet
Brushes	
*Toilet bowl brush	Bathroom
*Radiator brush (if not included with vacuum cleaner attachments)	Cleaning closet
*Whisk broom or upholstery brush	Cleaning closet
Small soft brush for cleaning ornate silverware	Kitchen
Small soft brush for carved furniture, etc.	Cleaning basket
Venetian blind brush	Cleaning closet
Long-handled wall brush	Cleaning closet

*Minimum Equipment.

Cloths, Sponges, etc.	*Where to Store*
*2–4 treated dustcloths (page 136)	Covered metal box in cleaning closet
*6 cheesecloth squares (24″ x 24″)	Cleaning closet
*2 flannel polishing cloths	Cleaning closet (if soiled with polish or wax, keep in covered metal box until washed)
1 chamois	Cleaning closet
*3 cellulose sponges (for kitchen, bathroom and cleaning basket)	Kitchen, Bathroom and Cleaning basket
*2 floor cloths (for kitchen and bathroom)	Cleaning closet
Cotton waste (this can be purchased at public garages or automobile supply shops)	Cleaning closet
Rubber gloves	Cleaning basket
Small funnel	Cleaning closet
Polishes and Polishing Materials	
Furniture polish or lemon oil (essential if paste or liquid wax is not used on furniture)	Cleaning basket
*Wax (paste, liquid or self-polishing)	Cleaning closet shelf
Denatured alcohol (POISON)	Cleaning closet shelf
*Metal polish	Kitchen
*Silver polish	Kitchen
Jeweller's rouge or rouge cloth	Kitchen
*Turpentine (flammable)	Cleaning closet shelf
*Lemon oil	Cleaning closet shelf
*Linseed oil	Cleaning closet shelf
Soaps, Abrasives and Cleansers	
*Mild scouring powder or whiting	Cleaning basket
*Ammonia (household)	Kitchen
Water softener (page 256)	Kitchen
*Toilet bowl cleaner	Bathroom
*Fuller's earth or other absorbent	Cleaning closet shelf
*Rottenstone	Cleaning basket

*Minimum Equipment.

Soaps, Abrasives and Cleaners—(CONTINUED)	*Where to Store*
*Carbon tetrachloride	Cleaning basket
*Household disinfectant	Kitchen
*Mild soap (chips, flakes, beads, grains)	
*Paint cleaner (commercial or homemade, page 167)	Kitchen Cleaning basket
Leather cleaner	Cleaning basket
*Art gum eraser	Cleaning basket
Wall paper cleaner, dough-type or pad	Cleaning basket
Solution for cleaning glass	Cleaning basket

Cleaning Basket

A small inexpensive open market basket with a handle makes an excellent cleaning basket which can be carried from room to room quite easily. We find that a box or basket measuring 12 inches long, 10½ inches wide and 8 inches deep is large enough to hold the articles listed below.

A fitted oilcloth lining with pockets to hold small objects is easy to make, and helps to keep the basket in order.

With a cleaning basket, there will be no need for hurried trips back to the source of supply for forgotten items. Check the contents with the following list before you start your cleaning program.

Whisk broom or upholstery brush (for brushing draperies and upholstery)
Small soft brush (for dusting carving, etc.)
1 treated dustcloth, page 136 (for daily dusting)
2 cheesecloth squares (for washing and drying woodwork)
Cotton waste (for applying polishes and cleansers)
1 flannel polishing cloth (for rubbing or polishing)
1 cellulose sponge (for washing woodwork, walls, etc.)
Art-gum eraser (for removing soiled spots from walls or from lampshades)
Wallpaper cleaner (dough-type or pad)
Furniture polish or lemon oil or wax
Mild scouring powder or whiting
Paint cleaner (page 167)
Carbon tetrachloride (4-ounce bottle)
Oil of peppermint (page 188)
Scissors

*Minimum Equipment.

CHAPTER XII

FLOORS

From the days when pioneer housekeepers scrubbed their unfinished wood floors to a gleaming whiteness, clean, well-cared-for floors have been the pride of "good housekeepers." In those early days there was just one type of floor and one method of cleaning—sand or strong soap, water and "elbow grease." Today there are many types of floors, and many finishes, and all of them require special care.

Beautiful floors need protection against wear, scratching and marring. Small rugs, placed where the wear is most severe, are a protection, as are the proper kind of furniture casters such as cushion glides or soft rubber ball-bearing casters.

Most of us do not realize how many kinds of floors and floorings exist, or that their care is further complicated by the finish which has been applied. Among wood floors alone, we must know whether the wood is hard or soft and whether the grain is closed or open, in order to select the proper finish. And we must know whether the finish is varnish, oil, paint, shellac, stain or wax in order to give it the proper care. In the case of factory-finished hardwood floorings, which are becoming more and more popular, the manufacturer's directions for cleaning and maintenance should be followed. Other floorings include linoleum, felt base floor covering, composition tile, rubber tile and sheet rubber, clay tile, marble, terrazzo, slate and cement. Each one demands special treatment. You see that there can be no blind assumption that a floor is just a floor, if we want it to have long life and lasting beauty.

FLOOR WAXES AND HOW TO USE THEM

Wax in its various forms is used as a finish for many types of floors.

Paste wax gives a mirror-like finish if properly used.

Apply it in a *thin* film with a lamb's-wool applicator or cheesecloth pad. *Too much wax smears and makes the floor slippery.*

Let it dry at least half an hour.

Polish until the surface is hard and lustrous, with an electric floor polisher, if possible. Polishing by hand, with a weighted polisher, is

somewhat tedious work. (In most cities of any size it is possible to rent an electric floor polishing machine.)

A second thin coat of paste wax increases the luster, and fine floors are often given three coats. Let each coat dry for half an hour and then polish to a hard surface before applying the next coat.

This type of wax builds up a beautiful finish over a period of years, if it is cared for properly.

Liquid wax is really paste wax with more solvent added. It is easier to apply than paste wax and the finish is the same as that produced by paste wax.

Apply it evenly in a *thin* coating with a lamb's-wool applicator or cheesecloth pad.

Let it dry at least half an hour.

Polish in the same way as for paste wax, using one or more coats as desired.

Self-Polishing Waxes have a water base and are often called "water emulsion" waxes. This type of wax is extremely easy to use and dries to a good shiny finish without polishing. The wax film is thinner and not as hard as the film given by paste or liquid wax, and must be renewed much more often.

Self-polishing wax is especially adapted to use on linoleum or kitchen floors and work surfaces. It should be used on wood floors only if the floor has been sealed with a waterproof finish such as a good varnish, shellac or paint, because otherwise the water base may raise the grain of the wood. This is the *only type of wax* which can be used on *rubber tile, sheet rubber, or asphalt tile,* because both paste and liquid waxes contain a solvent which is injurious to these floor coverings.

Apply in a thin film with an applicator or cheesecloth pad in long even strokes.

Allow to dry 20–30 minutes.

Care of Waxed Floors

Daily: Use an untreated dust mop. (Never use an oiled mop on waxed surfaces; it softens the wax and will leave an unabsorbed film of grease to catch dust.) Kitchen floors may need to be damp-mopped every day.

Weekly: Paste or Liquid Wax—Remove dust with vacuum cleaner or soft hair broom. Go over the floor with untreated mop if necessary. *Self-Polishing Wax*—Use a damp mop if necessary. Kitchen floors may require washing once a week or oftener. Washing directions are given below.

Monthly: Paste or Liquid Wax—Polish with weighted brush or electric floor polisher. Rewax spots which receive heavy wear, if necessary. Liquid wax is most useful for this work of patching. *Self-Polishing Wax*—If floor is soiled, wash with mop wrung out of warm mild soapsuds. Rinse with mop wrung out of clear warm water. When dry, apply fresh coat of wax, if necessary. To prevent excess accumulation of wax, scrub thoroughly between every two or three applications of self-polishing wax. When this is not done it may be necessary to use special cleaners to remove the old accumulation of wax.

Twice Yearly (or oftener if floor receives hard wear): *Paste or Liquid Wax*—Rewax entire floor.

Special Care of Floors Treated with Paste or Liquid Wax

Wipe up, *at once, water* spilled on floors waxed with paste or liquid wax or it will make *white spots* which will require rewaxing.

Remove *soil spots* with a cloth dampened lightly with turpentine or liquid wax. Rub on the spot until soil is removed. Allow to dry. Apply a new coat of wax. Allow to dry. Polish.

Scratches are treated like soil (above). Light scratches may disappear with polishing alone.

Removing an old wax finish is not necessary unless the floor has been badly treated. If floors are gummy from cheap wax, or if they have been badly neglected or stained, the old finish must be removed.

Choose one of the prepared wax removers which does not present a fire hazard, or carbon tetrachloride to remove wax. (Be sure to work in a well-ventilated room when using carbon tetrachloride.) (If turpentine is used to remove wax, have the room well ventilated and be sure there is no open fire or flame. Turpentine is flammable.)

Apply with a soft clean cloth to a small area, and work until all wax is removed before starting on a new area. Wash floor with a cloth wrung out of mild soapsuds. Rinse with cloth wrung out of clear warm water. Use as little water as possible; wash and rinse a small area at a time. Let dry thoroughly. Rewax (page 144).

WOOD FLOORS

Among the hard woods used for floors are oak, maple, beech and birch. Soft woods are Southern pine and cypress, Douglas fir, redwood and Western larch, red cedar and hemlock.

Hardwood flooring is more expensive than soft wood, takes a better finish, wears uniformly and is more attractive in appearance.

Paste or liquid wood fillers must always be used on open-grain wood floors such as oak, but fillers should be applied by an expert for satisfactory results. Close-grain woods such as maple, beech, pine and fir do not require this preliminary treatment.

The care and proper maintenance of a wood floor depend entirely upon the *finish* that has been applied. If you know which type of finish has been used on your floors and understand its advantages and disadvantages, you will be better able to give them the correct care that will insure longer life and better appearance.

Finishes for Wood Floors

Wax brings out the beauty of the grain in the wood, and may be applied to a floor which has been stained, painted, treated with a penetrating finish (page 148), varnished, shellacked or lacquered. Before applying wax to a floor which has been oiled, scrub the floor to remove as much of the oil as possible. If this is done wax can be used successfully.

The different types of floor wax and methods of application and care are discussed on pages 143–145.

Shellac

Shellac for wood floors is a popular finish with painters and landlords because it dries so rapidly that the floor is not kept out of service longer than 24 hours.

This finish coats the surface but does not penetrate the wood. Only the very best grade should be used, applied in thin coats. Even the best grade will scratch, chip or wear away unless it is kept protected at all times with wax.

Shellac has less tendency to darken with age than varnish. Worn areas can rarely be patched without a spotted effect which is most unsatisfactory.

This finish should not be used on any type of flooring except wood, and in general it is the least satisfactory finish even for wood.

Care of Shellacked Floors

If wax is used over shellac, see page 144.

Daily: Use an untreated dust mop.

Weekly: Sweep with hair broom or use vacuum cleaner. Dust with an untreated mop.

Special Care: Wipe up spilled water *at once* or it will leave white spots. Treat soiled or white spots with a cloth *barely moistened* with a solution of equal parts denatured alcohol (POISON) and turpentine. This solution will also remove the top layer of the shellac, so use almost no pressure in rubbing.

Varnish

Varnish is a tougher finish than shellac, scratches less easily, and is more resistant to water damage. Even quick-drying varnishes require longer intervals between coats, and the floor must be kept out of service for several days. Care must be taken to prevent dust from settling on the surface during the drying period.

Varnish tends to darken with age, and the same difficulty is experienced with attempts to patch worn areas as with shellac.

Coating a varnished floor with wax (page 143) increases its durability.

Varnish should be used only on wood flooring.

Care of Varnished Floors

If wax is used over varnish, see page 144.

Daily: Use an untreated dust mop.

Weekly: (Same as above).

Occasional: Wash floors finished with *waterproof* varnish when necessary, using a mop wrung out of mild lukewarm suds. Rinse with mop wrung out of clear lukewarm water. Let floor dry thoroughly before walking on it. Wash floors finished with other types of varnish only when absolutely necessary, and then with great care. Wash, rinse and *dry* one small area before going on to the next.

Gloss Lacquers

Gloss Lacquers are durable and have good resistance against damage by heat or water. They are quick-drying and form a hard glossy finish that does not mar easily or become "checked" when exposed to extreme changes in temperature. Worn areas can be patched without showing.

This finish may be used satisfactorily on all types of wood flooring. It can be applied over shellac but not over varnish or paint as the solvents in the lacquer dissolve these finishes.

Care of Lacquered Floors

If wax is used over lacquer, see page 144.

Daily: Use treated dust mop.

Weekly: Sweep with hair brush or use vacuum cleaner.

Occasional: Wash with mop wrung out of mild lukewarm soapsuds. Rinse with mop wrung out of clear lukewarm water.

Special Care: A fresh coat of lacquer may be applied without removing the old coating. Clean the old coating first. If wax has been used it must be removed before relacquering.

Penetrating Finishes or Seals

Penetrating Finishes or Seals which actually enter the wood and seal the pores are excellent to use on wood floors which are to be waxed. Applied by a professional, these finishes do not scratch with ordinary traffic, and may be patched if necessary, without detection. They cannot be applied over another type of finish. Two or three coats applied to a smooth clean floor produce a fine finish.

This type of finish is becoming increasingly popular for all kinds of wood floors. It is the only type recommended by the two hardwood flooring associations and by most hardwood flooring manufacturers.

The *care* of floors treated in this way is the same as for waxed floors of any type (page 144).

Floor Oil

Floor oil is not a particularly satisfactory finish. The surface is "tacky" and dirt clings to it. Eventually the floor darkens until it is almost black. Before applying wax to a floor which has been oiled, scrub the floor to remove as much of the oil as possible.

Care of Oiled Floors

Use a lightly oiled mop. When soiled, scrub with mild soapsuds and rinse with a mop wrung out of clear water. Let dry thoroughly. Apply a good grade of floor oil, according to the manufacturer's directions. Let dry for at least 12 hours.

Paint

Paint is another finish which is really a coating, because it does not penetrate. Patching worn spots cannot be done without producing

a spotted effect. Paint is seldom used on wood floors because it hides the beautiful grain of the wood.

The surface of a painted floor should be protected by a coat of wax (page 143) to increase its durability and ease of upkeep.

Care of Painted Floors

If wax is used over paint, see page 144.

Daily: Sweep with hair broom or use vacuum cleaner. Dust with untreated mop.

Weekly: Go over floor with damp mop.

Special Care: Frequent washing with a mop wrung out of mild soapsuds, followed by rinsing with a mop wrung out of clear lukewarm water. Use very little water and wash and rinse a small area at a time. Never let water remain on the floor. Let floors dry thoroughly before walking on them.

Unfinished Wood Floors

Camps and summer cottages often have unfinished wood floors. Perhaps this is fitting in a "back-to-nature" atmosphere, but it doesn't make the housekeeper's life any easier. Soft wood that has not been treated is apt to splinter and chip, which makes the cleaning problem even more difficult.

If you own the camp or cottage, we suggest that you apply a protective finish. A penetrating finish (page 148) plus wax is most satisfactory. Other finishes and their care are discussed on pages 146–148.

Care of Unfinished Wood Floors

Daily: Sweep with a corn or fiber broom.

Weekly (if necessary): Wash with a mop wrung out of warm water, mild soapsuds. Rinse with a mop wrung out of clear warm water. Do not use much water. Strong alkalis darken wood, so do not use washing soda, ammonia or similar cleaning agents.

Special Care: Spots and stains can be scrubbed away with a brush and scouring powder. Stubborn spots may require scrubbing with pumice, sand or steel wool.

Bleaching: Use a good commercial chlorine bleach according to directions on the bottle.

LINOLEUM AND COMPOSITION FLOORS

Linoleum

Resilient, comfortable underfoot, easy to care for and extremely good looking, linoleum has earned its popularity as a floor covering for every room in the house. It is made of oxidized oils and gums mixed with ground cork and wood flour and pressed on a fabric back, such as burlap, saturated felt, or, in the case of wall linoleum, a cotton back.

There are several types of linoleum, designed to meet varying needs, budgets and decorative plans.

Battleship and Plain Linoleum are solid color with no patterns. The color extends through to the backing.

Jaspé and Marbleized Linoleum are similar to plain except that they are multicolored with no regularity of pattern. These linoleums are inlaid and the variegated colors extend through to the backing, so that colors and pattern last throughout the life of the linoleum. The upkeep is easier than that of plain or battleship linoleum, because plain colors show up soil more than variegated colors do.

Inlaid Linoleum is made so the color in each part of the design extends separately, in sections, right through to the backing.

Printed Linoleum is thin-gauge plain linoleum pressed on burlap. The pattern is applied to the surface by printing or stamping with heavy oil paint. A coat of lacquer is applied at the factory. This is the least expensive type of linoleum and the pattern must be well protected from wear by a wax finish or it will wear off.

Felt-Back Linoleum is a fairly new type. The generous top layer is inlaid linoleum mounted on a backing of felted fabric saturated with asphalt which, in the case of one type, is cushioned with a layer of rubber. An adhesive on the back makes installation easy, because it does away with the extra expense and time for laying a felt lining. No rollers or heavy tools are needed for this installation. While this type of linoleum is really a permanent flooring, it can be taken up easily by starting at one corner and pulling. A new layer of adhesive must be applied when it is reinstalled.

Care of All Types of Linoleum Floors

Paste, liquid or self-polishing waxes, described on pages 143–145, all are satisfactory finishes for linoleum floors. Self-polishing wax is the most practical choice for linoleum in the kitchen or other workrooms, because it is so easy to apply and remove.

Daily: Dust with an untreated mop. The areas near work surfaces in the kitchen may need to be damp-mopped every day.

Weekly: Paste or Liquid Wax—Remove dust with vacuum cleaner or soft hair broom. Go over the floor with untreated mop if necessary. *Self-Polishing Wax*—Use a damp mop if necessary. Kitchen floors may need to be washed once a week or oftener (see directions below).

Monthly: Paste or Liquid Wax—Polish with weighted brush or electric floor polisher. Rewax spots which receive heavy wear, if necessary. Liquid wax is easy to use for this patching. *Self-Polishing Wax*—If floor is soiled, wash with a mop wrung out of warm mild soapsuds. Rinse with mop wrung out of clear warm water. When dry, rewax if necessary. To prevent excess accumulation of wax, scrub thoroughly between every two or three applications of self-polishing wax. If this is not done, it may be necessary to use special cleaners to remove the old accumulation of wax.

Twice Yearly (or oftener if floor receives hard wear): *Paste or Liquid Wax*—Rewax entire floor (page 143).

Special Care: Never use strong soaps because alkalis tend to soften linoleum. Harsh scouring powders may break through or scratch the sealed surface. Never flood the surface of linoleum with water. Wash as directed for waxed floors (page 145). Linoleum is more often washed away than worn away. Do not use shellac, varnish or lacquer, because they will cause linoleum to discolor and will form unsightly ridges in traffic lanes and eventually crack. Equip furniture with cushion glides or soft rubber ball-bearing casters.

Composition Floors

Felt Base Floor Covering is made of rag felt saturated with asphalt, to which a surface of oil paint is applied. In one type the color goes through to the backing, increasing the wearing quality. Felt base floor coverings should never be called "linoleum" or confused with felt-back linoleum. Its care is the same as that of linoleum floors.

Asphalt Tile Floor Covering. As its name indicates, this flooring has an asphalt base. It is resilient, resistant to ordinary acids and

alkalis, quiet, impervious to moisture, fire-resistant, easily cleaned and long wearing if directions for care are followed.

Care of Asphalt Tile Flooring

Daily: Dust with untreated mop.

Weekly: Sweep with hair broom or use vacuum cleaner. Dust with untreated mop. Damp mop with mop wrung out of clear cold water, if necessary.

Monthly: Wash with mop wrung out of mild lukewarm suds, or use a special cleanser recommended by the manufacturer. Rinse with mop wrung out of clear lukewarm water. Dry with clean dry mop. Apply self-polishing wax or special finish recommended by the manufacturer.

Special Care: Do not use an oiled mop or any cleaner which contains oil, as oils attack asphalt. Avoid strong soaps or soap powders, harsh scouring powders or detergents. Paste or liquid wax should never be used, as they contain solvents which soften asphalt and cause colors to run. Equip furniture with glides or ball-bearing casters with wide soft rubber treads. Metal domes should be removed.

Rubber Tile and Sheet Rubber Flooring. This type of flooring may be used in living rooms or bedrooms, but is not recommended for kitchens, laundries or bathrooms, because oils, grease, soap and excess water are bad for rubber, softening it and causing it to swell. Rubber tile is resilient, durable if properly cared for, quiet and easy to clean.

Care of Rubber Tile and Sheet Rubber Flooring

Daily: Dust with untreated mop.

Weekly: Sweep with hair broom or use vacuum cleaner. Dust with untreated mop. Damp mop with mop wrung out of clear cold water if necessary.

Monthly: Wash with a cleaning solution recommended by the manufacturer. Rinse thoroughly with mop wrung out of clear cold water. Mop, rinse and dry a small area at a time. Never flood the floor with water. Apply self-polishing wax (page 144) or a finish approved by the manufacturer. Never use lacquer or varnish, or paste or liquid wax as finishes for this type of flooring (these waxes contain solvents which attack rubber).

Composition Tile Flooring is a resilient floor tile made of plastic material composed of resinous binders and fibers. It has a glaze resembling terra cotta and is non-absorbent, greaseproof, acid-resistant, impervious to moisture and very durable. It comes in a wide range of colors, plain or marbleized. Stains are easily removed from it.

Care of Composition Tile

Daily: Dust with untreated mop.

Weekly: Damp mop with clear cold water.

Monthly: Wash with mop wrung out of lukewarm mild soapsuds or use the special cleaner recommended by the manufacturer. Rinse with mop wrung out of clear lukewarm water. Dry. Apply self-polishing wax (page 144) or special finish recommended by the manufacturer.

Special Care: Do not use sweeping compounds, oil, waxes with a solvent base or strong soaps and cleaners. Lacquer, shellac or varnish should never be applied. Furniture resting on this flooring should be equipped with cushion glides or soft rubber ball-bearing casters.

CLAY TILE, SLATE, MARBLE, TERRAZZO AND CEMENT FLOORS

Clay or Ceramic Tile Flooring. This tile may be had in all colors, with a glazed or unglazed finish, and is both durable and decorative. It is used for flooring in residences, mainly in bathrooms, sun rooms and play rooms. It is also used for porch floors, walks and swimming pools. "Association Tile" is made by manufacturers who are members of the Tile Manufacturers' Association, and meets specifications of the Association and the U. S. Department of Commerce. It is packed in containers showing a grade seal.

Care of Clay or Ceramic Tile Flooring

Daily: Brush with hair broom. Do not use a dust mop, as this treatment is apt to deposit dirt in crevices between tiles.

Weekly: Glazed tile may be cleaned with a damp cloth. Extremely dirty areas on unglazed tile may be cleaned by scrubbing with steel wool, scouring powder and water.

Occasionally: Certain types of tiles, such as "quarries" and handmade unglazed tiles, may be waxed if desired.

Cautions: Never use an acid solution on glazed tile. Never use a mop because it is apt to leave dirty sediment in the crevices.

Removing Stains from Unglazed Tile

1. All materials that might stain should be wiped up before they dry and harden.
2. Surface stains can sometimes be removed by scrubbing with a mild scouring powder or trisodium phosphate.
3. If a stain has penetrated deeply, a "poultice treatment" should be applied. Dissolve 1 part sodium citrate crystals (purchased at a drugstore) in 6 parts water. Measure. Add an equal volume of glycerine; mix well. Work in enough whiting to make a thick paste. Apply ⅛-inch thick covering of this paste. Let dry. Remove. Repeat until stain disappears.
4. Paint stains may be removed with a special tile bleach (available at paint supply stores), following directions on the package. If you use paint remover, try it first on an inconspicuous part of the floor. Another treatment for stubborn paint stains is to moisten a thick pad of cloth or cotton with hydrogen peroxide and place over the stain. A second cloth, moistened with ammonia, is placed over the first. Let stand several hours and repeat if necessary. If the stain remains, alternate this treatment with an application of thick paste made by mixing 1 part trisodium phosphate, 1 part sodium perborate and 3 parts powdered talc with hot soap solution. Cover the stain with this paste; let dry. Remove. Apply cloths as above. Repeat if necessary.

Slate Tile Flooring requires the same type of care as terrazzo (page 155). Self-polishing wax may be applied as finish.

Marble Flooring is sometimes used in entrance halls, stairways and living rooms of private dwellings.

Care of Marble Floors

Daily: Dust with untreated mop.

Weekly: Washing is usually necessary to prevent cloudy film and discoloration caused by grease, dirt and dust. Dampen the floor and sprinkle with a mild scouring powder having a volcanic ash base.* Mop until clean. Rinse and wipe dry. Or use mild soapsuds made with white soap flakes and

*The trade name of one such scouring powder which has national distribution is "Wyandotte Cleanser."

soft water (page 256). Hard water and soap form an undesirable coating on the marble. Buff with soft woolen cloth, cotton waste or chamois.

Special Care: Do not use harsh abrasives which destroy polish, or strong salt solutions, acids and caustic cleansers which attack marble.

Removing Stains from Marble

1. Treat any stain promptly and persistently.
2. For most stains, use a poultice made of volcanic ash scouring powder* and hot water, ¼-inch thick. Allow it to remain on the stain 48–72 hours. Dampen and remove with a wooden paddle. Repeat several times if necessary.
3. Ink stains should be covered with a pad saturated with ammonia or chlorine bleach and left for several hours. One manufacturer puts up special cleaners and stain removers for marble.

Terrazzo Flooring is used for sun porches, halls and main stairways. It is made by mixing a small percentage of cement with chips of marble ground down to make a smooth surface. Polishing at the factory produces a shiny appearance. Blocks of terrazzo are often separated by metal strips which allow for expansion and contraction caused by changes in temperature, thus preventing cracks. These floors should not be washed for at least one week after installation.

Care of Terrazzo Floors

Daily: Dust with an untreated mop.

Weekly: Brush with hair broom or use vacuum cleaner. Dust with untreated mop.

Monthly: Wash a small area at a time with a mop wrung out of mild lukewarm suds. Rinse with a mop wrung out of clear lukewarm water. Dry.

Cement (Concrete) Floors are most often found in the basement of private homes. The growing popularity of basement playrooms makes it necessary to keep this type of floor in good condition.

Finishing cement floors makes it easier to care for them and keeps down dust. A special paint, especially intended for cement or concrete floors is most satisfactory.

*The trade name of one such scouring powder which has national distribution is "Wyandotte Cleanser."

A hard wear-resistant surface may be applied instead of paint, if desired. The National Bureau of Standards recommends the following procedure:

Mix 1 gallon of sodium silicate (water glass) with 4 gallons of water. This makes enough solution to coat 1000 square feet once. The floor should be clean and thoroughly dry. Apply the solution with a mop or hair broom and let the floor dry for 24 hours. Scrub with clear water and let dry. Apply a second coat as above. Three or four coats produce a bright hard surface.

Care of Cement (Concrete) Floors

Unfinished: Wash periodically. Wet the floor first, then scrub with hot water and scouring powder. Rinse well. Do not use soap. Self-polishing wax (page 144) lessens dust problems and makes care easier.

Painted or Hard Finish: Apply self-polishing wax (page 144). For care, see page 144.

Removing Oil or Grease Stains from Cement. Scrub with a solution of 4 ounces of trisodium phosphate to 1 gallon of hot water and scouring powder, using a stiff brush. Rinse well. If the stains are old, sprinkle with trisodium phosphate and moisten with a little water. Let stand at least a half hour, then scrub and rinse as above. Or mix whiting with enough of the trisodium phosphate solution to make a thick paste; cover the stained area with the paste, and leave until dry. Remove and rinse.

Plastic Magnesia Cement Floors. These floors contain magnesium oxychloride as the cementing agent. Self-polishing wax (page 144) may be used to protect the surface.

CHAPTER XIII

WALLS, CEILINGS AND WOODWORK

In this day and age there is no need to put up with monotony of wall treatment. The vast variety of materials and finishes that are available makes possible a selection that will fit both needs and budgets in return for a little "shopping around" to get information and prices. Make your choice with an eye to ease of cleaning as well as to beauty, remembering that each type of wall covering needs its own special type of care.

Dusting Walls

It is extremely important that walls be dusted regularly and often if more difficult cleaning tasks are to be avoided. Walls that are neglected in this respect soon acquire a film of greasy dust that attracts and holds still more dust and which inevitably becomes embedded and difficult to remove.

The only exception to this rule occurs in the case of papered walls. In soft coal regions or industrial sections dusting papered walls is not advised, because soot will be grimed into the paper no matter what method of dusting is used. An annual cleaning with a dough-type cleaner is recommended.

In other regions where dust and cobwebs are the only problem, papered walls may be dusted with the suction attachment of the vacuum cleaner.

There are three tools for dusting walls:

1. A soft wall brush of hair, nylon, lamb's wool, yarn or sponge rubber, with a long handle.
2. A fiber or corn broom covered with an "apron" of soft clean cloth, such as cotton flannel.
3. The dusting attachment of the vacuum cleaner (see illustration, page 159). If you have this attachment use it, by all means, because it eliminates any scattering of dust.

Work from the top down, giving special attention to high mouldings (page 168). There is one exception to this rule: if cobwebs are present,

whether they are spider webs or dust cobwebs, remove them with an *upward lifting* stroke to avoid streaking the walls. Cobwebs of any sort are sticky, and if they are pulled down against the wall they will leave a trail of dirt that is hard to remove.

Neglected radiators cause unsightly soil deposits on the surrounding walls. To avoid this, clean the radiators often, especially during the season when they are in use (page 207). Radiator shields are helpful in preventing soil accumulations because they throw the air which passes around a radiator out into the room rather than allowing it to circulate up the wall.

PAINTED WALLS

If painted walls are dusted frequently they seldom need washing. When washing does become necessary, don't go ahead until you have washed a small area in some inconspicuous corner, to see what effect it has on the paint. If you know that the paint is washable and of good quality this precaution is not so important.

If the walls are lightly soiled, mild soap and water or the whiting cleaner below will clean them. Strong soaps, harsh scouring powder and powerful cleansing solutions must always be avoided. If the walls are heavily soiled try one of the following solutions (do not increase the proportion of the chemical, because too much will remove paint and is hard on the hands):

1. ½ ounce trisodium phosphate to 2 gallons of warm water.

or

2. 1 teaspoon tetraphosphate compound (page 257) to 1 gallon of warm water.

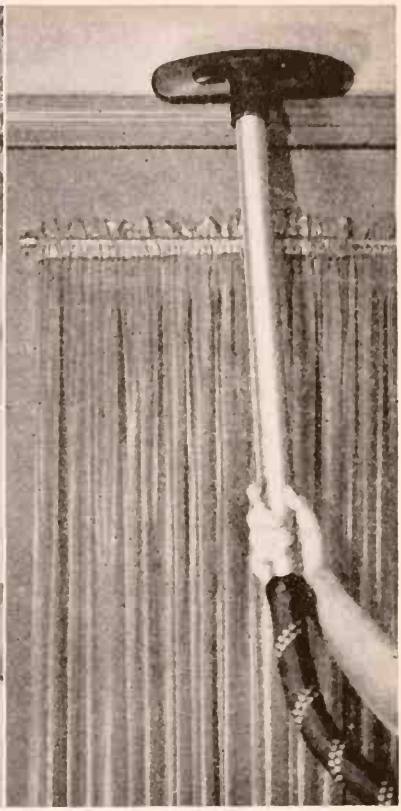
or

3. Sodium hexametaphosphate compound (page 257), used according to manufacturer's directions.

Whiting Cleaner for Painted Walls

2 tablespoons white soap flakes 10 tablespoons lukewarm water
1¼ cups whiting

Dissolve soap flakes in water. Cool until jellied. Stir in whiting. Apply with damp cloth or sponge.



Top left: Use a special dough-type cleaner on non-washable wallpaper.
Lower left: Use a cellulose sponge or soft cloth to wash a painted wall.
Right: Use the vacuum cleaner attachment to dust high moldings.

How to Wash Painted Walls

Follow this procedure:

1. Dust thoroughly (page 157).
2. Start at the bottom and work up. (If warm water runs down over a soiled wall it will leave streaks that are almost impossible to remove, but if the wall has been washed first, no streaking results.)
3. Apply the chosen cleansing solution to a small area with a cellulose sponge or a soft cloth, using a circular motion. For textured or sculptured walls a stiff brush is more effective than cloth or sponge.

4. Rinse the clean area with clear *soft* water (page 256). Hard water may streak, cloud or spot the walls.
5. Wipe with turkish towelling wrung out of clear water, using an up-and-down stroke.
6. Wash a new area, always starting well within the cleaned area, to avoid streaking.
7. Some authorities recommend applying liquid or self-polishing wax to clean, dry painted walls, in order to restore luster and make future cleaning easier. A wax finish resists fingerprints and soil and consequently stays clean longer.

WALLPAPER

Never attempt to wash wallpaper unless you are sure that it is *guaranteed washable*. See page 157 for dusting instructions.

Non-Washable Wallpaper

Non-washable wallpaper may be cleaned with a special doughlike preparation or cleaning pad intended for this purpose. This is not easy and a good job requires time and patience.

1. Knead a portion of the cleaner until it is pliable.
2. Clean a strip at the top of the wall, next to the ceiling. Do not press or rub, merely wipe the surface. Fold the cleaner over as it becomes soiled.
3. Clean a strip from the top to the baseboard, using straight even strokes.
4. Repeat, starting within the cleaned strip each time.
5. Brush the walls and baseboards to remove any crumbs of cleaner that may cling to them.

Spots and stains are not easy to remove from non-washable paper. The following treatments are sometimes effective:

Grease Spots

1. If fresh, hold a clean white blotter over the stain and apply a warm (not hot) iron, moving the blotter as it takes up grease.
2. Stubborn grease spots often respond to a poultice treatment. Make a paste of Fuller's earth or commercial dry cleaning powder, and carbon tetrachloride. Apply thickly to the spot, and thin out at the edges beyond the soiled area. Let it remain until thoroughly dry. Wipe off carefully with a cloth dampened with carbon tetrachloride. Repeat the treatment if necessary.

Caution: It is wise to test this treatment on an inconspicuous area first, as certain pigments "bleed" when carbon tetrachloride is applied.

Crayon Marks

1. Dampen a clean soft cloth with carbon tetrachloride and sponge lightly. *Do not rub.* It is practically impossible to remove all traces of crayon marks, but repeated sponging may lighten them so that they are almost invisible.
2. If a ring is left, apply a poultice of commercial dry cleaning powder and carbon tetrachloride. Let dry and brush off.

Smudge or Grime: Use dough-type wallpaper cleaner or art-gum eraser.

Food Stains

1. Brush off as much as possible.
2. If greasy, sponge with carbon tetrachloride.
3. Hot grease will penetrate any finish applied to the surface of wallpaper and cannot be removed.

Ink

1. Blot up surplus quickly, being careful not to spread stain.
2. Apply absorbent powder, brushing it off as fast as it takes up the ink. Repeat until no more ink is taken up.
3. Ink eradicators or bleaches are apt to remove color from the design, so apply very cautiously if at all.

Lacquer for Wallpaper

Perhaps you live in a rented house or apartment where a misguided owner has papered the kitchen or bathroom with non-washable wallpaper. Or perhaps there are small children in the family who may add a fingerprint or crayon design to wallpaper in other rooms. In these instances a coat of flat lacquer on the wallpaper will spare you much anguish.

1. Clean the walls thoroughly (page 160).
2. Apply two coats of gelatin-like wallpaper size, with a soft brush and as few strokes as possible. Allow time for thorough drying between coats.
3. Apply one or two coats of wallpaper lacquer. (This lacquer is flammable, so keep it away from any open flame and keep the can covered when not in use.)

Caution: Sometimes *red* or *yellow* colors "bleed" when lacquer is used. If either of these colors is present in the wallpaper, it is best to test the lacquer on an inconspicuous spot before going ahead.

These lacquers darken some papers slightly, although not enough to be objectionable, but once applied marks or spots can be erased or wiped off without damage.

Wax emulsion can also be used, and gives a result similar to lacquer.

Washable Wallpaper

Dough-type wall cleaners are recommended for washable wallpapers also. If the paper is carefully cleaned in this way it may be necessary to wash only such grimy spots as may remain. Be sure to use the particular cleaner recommended by the manufacturer of the wallpaper if you have this information.

Wallpaper that is guaranteed washable may be washed in the following manner:

1. Make suds with mild soap and cold water.
2. Wet an area somewhat larger than area to be washed, using *clear cold water.*
3. Apply suds sparingly to a small area with a sponge. Do not rub hard.
4. Rinse thoroughly with a sponge wrung out of clear cold water.
5. Wash another area, starting *within* the clean area. Repeat. (Unless full sections of the wall are washed, the difference may be very noticeable because of the film of soil remaining on the unwashed areas.)

Caution: Avoid water-softening compounds, harsh soaps, alkalis and hot water.

Spots and stains are easier to remove from washable wallpaper than from non-washable, because soap and water can be used safely.

Crayon Marks: After sponging with carbon tetrachloride, wash with soap and water as above.

Grease Spots: Page 160.

Smudge or Grime: Page 161. If grimed areas remain, wash with soap and water, as above.

Fruit Stains: Wash first, as directed above. Let dry. If stain remains, sponge with denatured alcohol (POISON); let dry. If the stain

has not disappeared, carefully apply a 3 per cent solution of hydrogen peroxide (too much may change the color in the paper). Repeat the entire procedure if necessary.

Ink

1. Blot up surplus quickly, being careful not to spread the ink.
2. Apply full-strength chlorine bleach sparingly by moistening a cloth and patting the spot gently. *Do not rub.*
3. Wash with water after using bleach.

Paint Stains: If fresh, remove with paint solvent.

Water Stains: Occasionally wallpaper becomes discolored with an ugly brown stain caused by water seepage around window casings and under eaves. One or two poultice treatments of Fuller's earth and solvent (page 160) will generally remove this type of stain. Let dry overnight. Scrape off loose powder. Remove any remaining powder with cloth or sponge dampened with cold water.

Covering Stains: If walls are badly spattered with some stain which is difficult to remove, such as ink or paint, it is possible to have a paint craftsman match the ground color of the paper with casein paint and paint over the spots with an artist's small paint brush.

Success in spot removal depends on the kind of stain, the degree of penetration into the paper, and skill in cleaning.

Repairing Damage to Wallpaper

Small Tears

1. Apply paste carefully to torn edges with a small paint brush. Press back into place.
2. Hold clean white blotting paper over the repaired section and rub briskly until the paste holds.

Open Seams may be pasted back in the same manner.

Large Tears or Holes

1. Patch with matching paper left over from the original supply.
2. Tear the paper for the patch, do not cut it, because torn edges are more inconspicuous and easier to work with.
3. Match the pattern as nearly as possible to the torn area.
4. Apply paste to the patch and place it over the tear or hole.
5. Hold clean white blotting paper over the patch and rub briskly until the paste holds.

Bulges or "Air Bubbles": Pierce the bulge with a large needle, that has had paste applied to the point. Flatten the paper and rub, as above. Or slit the bulge and apply paste with a small paint brush or medicine dropper.

Gloss-finish Wallpaper

These wallpapers have a faintly glossy finish which is less absorbent than that of other papers. This finish resists staining, and grease or grime can be wiped off easily. The method described on page 162 is used for washing this type of paper also.

OTHER TYPES OF WALL COVERINGS AND MATERIALS

Coated Fabric

Coated fabric for walls is obtainable in a wide variety of lovely colors and patterns from which it is possible to select a suitable design for any room in the house.

Strong cotton cloth is coated with several layers of fine quality paint which is chemically treated to make it moisture-proof and washable. Dull or glossy finishes are available.

Now that improved methods have eliminated the shiny "oilcloth look" that these wall coverings once had, there is no need to limit their use to service rooms. This should be welcome news to those of us who despair of keeping walls immaculate with youngsters charging through the rooms, careless of their grimy fingers!

Colors and patterns will not wash off, and consequently wall coverings of this type may be kept clean and fresh over a long lifetime.

The method for washing follows:

1. Dust walls (page 157).
2. Wash a space as large as can be reached conveniently, using mild soapsuds.
3. Rinse with clear water to avoid streaking.
4. Wash another area starting within the clean area. Repeat.
5. Wax, if recommended by manufacturer.

Grass Cloth

Fibers from honeysuckle bark or jute are bleached, then vat-dyed, woven, and attached to a backing of rice paper. The stencilled pattern is applied to the surface.

Beautiful color contrasts are made possible by using metallic or

colored rice papers which show through the colored fibers. In very thin weaves hand-stencilled patterns applied to the backing papers show through with great effectiveness.

Grass cloth wall coverings, properly installed, have a long life expectancy. If they are stretched too tightly there is danger of cracking.

Frequent dusting (page 157) keeps this type of wall covering in good condition. Heavy soil or stains can be removed with a dough-type wallpaper cleaner (page 160). Grease spots can be removed with blotting paper and a warm iron (page 160).

Ceramic Tile and Porcelain-Enamelled Steel Tile

Walls of these materials are easy to clean. Wash them with a cellulose sponge and warm, mild soapsuds. Rinse with a sponge wrung out of clear warm water and dry with a soft cloth.

Structural Glass, Tempered Plate Glass and Glass Blocks

Clean in the same way as tile walls, above.

Linoleum, Cork and Composition Tile

For best results use the cleanser and finish recommended by the manufacturers. Mild soapsuds applied sparingly with a sponge will clean these types of walls. Rinse with a cloth or sponge wrung out of clear water. Dry thoroughly. Self-polishing wax may be used as a finish.

Moulded Plastic

Clean in the same way as tile walls, above.

Pressed Wood

The care of tempered pressed wood walls which have a synthetic resin finish is quite simple. Regular dusting (page 157) and an occasional wiping off with a clean damp cloth are all that is required.

Gypsum and Insulation Boards

Gypsum wallboard contains materials from fireproof gypsum rock and can be obtained in a variety of finishes from a metal foil surface to simulated knotty pine, American walnut or tile. The care of this type of wallboard is the same as for pressed wood, above. Liquid or self-polishing wax may be applied if richer finish is desired. Tile

board with an enamelled finish can be washed with warm suds made with mild soap, rinsed and dried.

Insulation boards are now available in a wide range of colors, a silvery finish, or a plain finish which can be painted or varnished.

Insulation board with natural or special finishes should be dusted regularly. Follow manufacturer's directions for further care of special factory finishes. To remove heavy smudges from board with a natural finish, rub lightly with fine sandpaper. Grease spots should be sponged repeatedly with carbon tetrachloride until they disappear. Wood-veneered insulating board is finished with varnish or wax and is cared for like wood panelling.

Wood Panelling

The care of wood-panelled walls is much the same as the care of wood floors and furniture, and depends on the finish.

If waxed panelling becomes greatly soiled, remove the wax with additional liquid wax and apply a fresh coat of liquid or self-polishing wax.

If varnished or shellacked wood panelling becomes extremely soiled it may be cleaned with furniture wash (page 187). Then apply the following polish:

Polish for Varnished or Shellacked Surfaces

½ cup turpentine
1 cup boiled linseed oil
1 tablespoon vinegar

Mix thoroughly. Apply like furniture polish (page 185).

Plywood Veneer with Synthetic Resin Finish

Walls of this material may be washed with a cellulose sponge or cloth wrung out of warm mild soapsuds. Rinse with a sponge wrung out of clear water and dry with a soft cloth.

CEILINGS

The care of ceilings depends on the way in which they are finished. Regular dusting is essential and the tools used for dusting walls may be used for ceilings also. If ceilings are high, be sure to choose a safe, sturdy stepladder or step stool to stand on.

Ceilings finished with calcimine or whitewash cannot be washed

without removing the finish. Painted, papered and wood-panelled ceilings are cared for in the same way as walls finished in these ways (pages 158–166).

Perforated acoustic tile ceilings, often installed in kitchens to deaden sound, are usually painted, and can be cleaned in the same manner as painted walls. Non-perforated unpainted acoustic material used in other rooms is kept clean by brushing, preferably with the brush attachment of the vacuum cleaner.

WOODWORK

Painted Woodwork

Woodwork needs frequent attention to keep it free of fingermarks and soil. Washable high-gloss paint makes this work easy, since mild soap and water or mild scouring powder removes even heavy soil. Special paint cleaners or a weak solution of trisodium phosphate, sodium hexametaphosphate compound or tetraphosphate compound (page 257) can also be used.

Frequent dusting and wiping with a damp cloth do away with the need for frequent heavy cleaning. However, if heavy soil collects, use this paint cleaner:

Paint Cleaner for Painted Woodwork or Furniture

½ cup white soapflakes — 1 quart hot water

½ cup whiting

Dissolve soapflakes in hot water. Let cool until jellied. Stir in whiting. Apply with clean damp cloth. Rinse with soft cloth wrung out of clear water. Dry.

Waxed Woodwork

Some authorities recommend the use of liquid or self-polishing wax on painted woodwork, to preserve the surface and make cleaning easier. Wax may also be applied to woodwork which has a natural wood finish. Frequent dry dusting and an occasional going over with a dampened cloth keeps waxed woodwork in good condition. Occasionally the old wax finish should be removed and a fresh coat applied. Warm soap and water will remove self-polishing wax, and liquid wax is easily removed by rubbing with a cloth dampened with more liquid wax.

Varnished Woodwork

Dust varnished woodwork with a treated duster (page 136) and go over it occasionally with a damp cloth. If the woodwork is extremely soiled, wash it with the furniture wash described on page 187, being careful not to soil the surrounding walls. Unless a dull finish is desired, polish with lemon oil or rottenstone and lemon oil mixed to the consistency of thin cream, again using care not to soil the wall.

Special Problems

Mouldings, door frames and baseboards should be dusted frequently with a brush or the brush attachment of the vacuum cleaner.

Cove mouldings prevent scarring by shoes, toys or furniture.

Carpet sweepers and vacuum cleaners should be equipped with rubber guards so that they won't scar or dent baseboards if they hit them accidentally.

Window sills and frames need constant care if they are to be kept from getting grimy. A coat of liquid, paste, or self-polishing wax makes this task easier.

CHAPTER XIV

WINDOWS AND WINDOW FITTINGS

WINDOWS

A shining, crystal-clear window is a real source of pride. How long it will stay clear and sparkling is a moot question. The answer depends on the weather, the amount of dust and soot in the air, the number of times sticky little fingers are pressed against it, and so on.

But window cleaning isn't the messy tiresome job it used to be, and so no one minds doing it often, if necessary, to achieve that shining look.

No matter what method and materials you choose, one word of caution is necessary. Don't ever sit on the window sill to wash the outside of the window panes, and do not allow a household employee to sit there either. With most windows it is possible to raise and lower the panes to get at the outside window without relinquishing a firm footing. If this isn't true of your windows, or if you live in an apartment building, then you must call in a professional window cleaner to wash the outside.

Liquid cleaners for windows may be purchased in bottles equipped with sprays and are extremely easy to use. The liquid is sprayed on and wiped off immediately with a clean soft lintless cloth. A second dry cloth is used for a final polish. Never work in direct sunlight—the window panes dry too quickly and are apt to look streaked.

The following *solutions* are also used for window cleaning:

2 tablespoons household ammonia to 2 quarts warm water, *or*

2 tablespoons vinegar to 2 quarts warm water, *or*

1 tablespoon borax to 2 quarts warm water, *or*

1 tablespoon kerosene to 2 quarts warm water, *or*

½ cup denatured alcohol (POISON) to 2 quarts warm water

The last-mentioned solution is the best of the homemade mixtures to use if windows must be washed in freezing temperatures.

All these solutions are applied with a clean, soft lintless cloth or a cellulose or natural sponge. Wipe them off with a rubber squeegee,

a clean damp chamois or soft dry cloth. To use a squeegee, hold it firmly against the pane and draw it down in a straight stroke. After each stroke, wipe the edge of the squeegee with a cloth or sponge.

Very fine scouring powder or whiting may be used for cleaning windows. Apply a light coating with a damp cloth or sponge. Wait until it is almost dry, then remove the coating with a soft, clean lintless cloth. If you wait until it is thoroughly dry, the powder may settle on the window frame and necessitate dusting. In any case, when this method is used, do not give the room its final dusting until the windows are finished.

Paint or varnish spatters on window panes are more easily removed when they are fresh. Use a cloth dampened with turpentine. Old spatters should be softened with turpentine or paint remover applied with a brush, then scraped off with a putty knife, or a safety-razor blade held in a handle. The latter may be purchased in the ten-cent store.

Putty smears are easily removed from window panes with household ammonia.

WINDOW FITTINGS

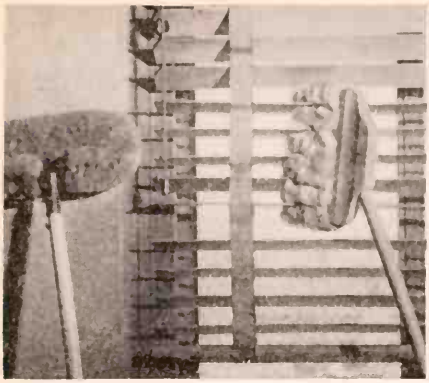
Shades

Window shades should be dusted or vacuumed on both sides frequently. If you are replacing your shades, by all means purchase a type that is washable.

Non-washable shades may be cleaned like wallpaper (page 160) unless they are allowed to get too heavily soiled.

Washable shades are made of Holland cloth, painted fabric or pyroxolin-impregnated cloth. Take down one shade at a time, dust it thoroughly and place it on a flat surface. Scrub it with a soft brush or sponge and mild thick soapsuds. Use water sparingly. Rinse off with a cloth or sponge wrung out of clear water. Wipe dry. Turn the shade and wash the other side. Hang the shade at the window but do not roll it up until it is thoroughly dry.

Pyroxolin-impregnated shades faced with glazed chintz are decorative although not as practical as plain washable shades. The two materials are sewed together at the sides, top and bottom. The chintz side should be dusted and brushed frequently, as it is not washable. The backing may be washed in the same manner as all washable shades, being careful not to soak the chintz.



Photographs by William H. Zerbe and Patricia Hall

Left: A soft wall brush keeps painted walls free from dust. The Venetian blind brush saves time by cleaning several slats at once.

Right: Washable shades look like new after they have been scrubbed with mild soap lather and a cellulose sponge.

Venetian Blinds

Brushes of lamb's wool or soft bristles, divided into fingers, make it possible to dust several slats at a time. The brushes are washable. When the slats become soiled they may be washed with a cloth wrung out of mild warm soapsuds or cleaned with a paint cleaner. Wipe off soapsuds or cleaner with a cloth wrung out of clear warm water, and dry with a soft cloth. Smudges may often be removed with an art-gum eraser.

Furniture wax may be applied to the slats of Venetian blinds to give them an easily cleaned protective finish.

Dust the tapes with a soft brush or the brush attachment of a vacuum cleaner. If the color is fast, the tapes may be shampooed like upholstery (page 190). Let the tape dry thoroughly before rolling up the blind.

Wood-Slat or Bamboo Porch Shades

The slats should be brushed off several times during the season to keep them looking fresh. If washing is necessary a garden hose may be used. Do not roll up the shades until they are perfectly dry.

Valence or Cornice Boards

If the boards are made of polished or painted wood, clean them as you do furniture of these types (pages 185 and 194). If cloth-covered,

brush frequently with the brush attachment of the vacuum cleaner. When the cloth becomes soiled, send it to a reliable dry-cleaning establishment (page 309) if the fabric is not washable. If covered with wallpaper, follow directions on pages 160–162 for cleaning.

Screens

If screens require cleaning other than brushing during their brief season, they must be taken down and scrubbed with a brush and soapsuds. Use the garden hose for easy rinsing. Screens made of copper or bronze wires will not rust or corrode. Screens always should be cleaned in this fashion and thoroughly dried before being stored for the winter.

Awnings

Never leave awnings up all the year round. Awnings cannot be cleaned, but they can be repaired by professionals if they are torn or burned. If the awnings get wet, keep them down until thoroughly dry, to avoid mildew. If it starts to rain while awnings are raised, lower them as soon as possible. Dirty water may collect in the folds and cause stains.

Glass Curtains and Draperies

The laundering of washable glass curtains is discussed on pages 301 and 302. Directions for laundering washable draperies are given on pages 303–304.

CHAPTER XV

RUGS AND CARPETS

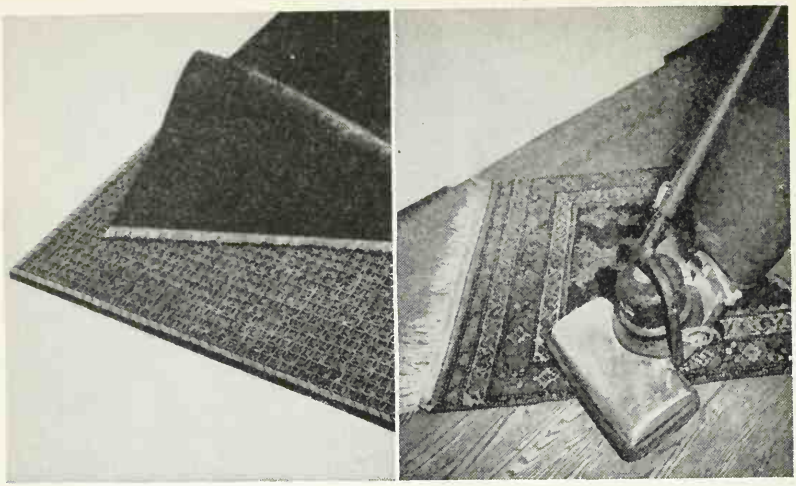
A rug or carpet is a major investment and its purchase is usually carefully considered and planned for long in advance. When the time arrives for the actual purchase you shop for days, sometimes, to find the rug you have wanted for so long. Quite naturally, after spending so much time and money, you expect the rug to last for many years. If you have bought wisely and if you give it the care it deserves, you can be sure the rug will reward you with good service.

Dirt is the great enemy of rugs. There are three types of soil to be combated: surface littter, such as crumbs, lint, thread, sand, tracked-in dirt, etc.; all-over surface soil which is greasy; and grit. Of these three, grit does the most serious damage. If you allow embedded grit to remain in rugs they will soon be ruined, because the grit sifts down to the base of the nap and, when walked on, cuts off small pieces of the pile. The daily use of a carpet sweeper, and weekly cleaning with a vacuum cleaner prevent grit from settling deeply into the rug. Clean carpets and rugs pay dividends in longer life.

Certain types of rugs are harder to care for than others and you should take this point into consideration in making a selection. Light colors naturally show spots and stains. Gradual accumulation of soil will darken and change the color. Areas where traffic is heavy are apt to change in color. Professional shampooing is needed much oftener when the rug is light colored. On the other hand, very dark, plain-colored rugs show dusty footprints. Patterned rugs or plain rugs in medium tones are, therefore, easier to care for. Rugs with heavy, dense pile will take hard usage. Carpets which cover the entire floor area make rooms seem larger but the professional cleaning of such carpets is expensive. All of these points should be considered in making a selection.

There are several precautions which apply to the care of all types of rugs which, if heeded, will do away with the heartbreak of seeing an expensive rug wear out quickly, before your very eyes:

1. The floor on which a rug or carpet is to be laid should be smooth and even. Rough, uneven flooring, loose boards, protruding nails



Photographs by William H. Zerbe

Left: Good rugs deserve good rug cushions to lengthen their lives.
Right: Run the vacuum cleaner diagonally across a small rug and off the edge, as shown.

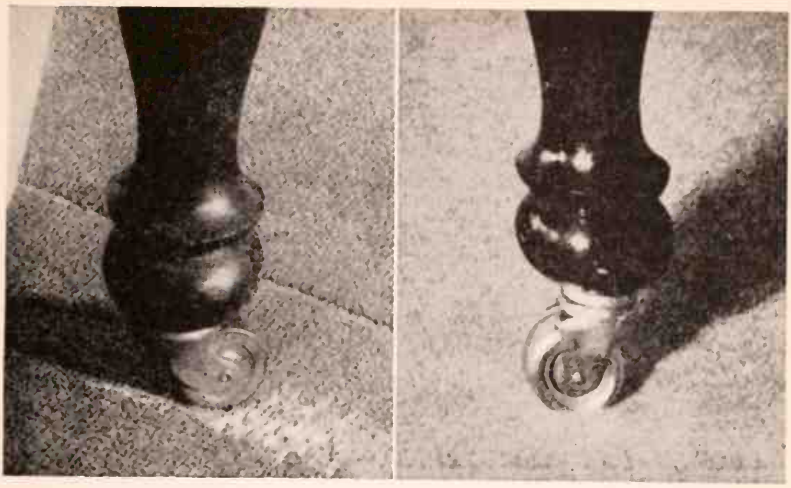
or knots in the wood will wear holes or make unsightly ridges in the rug. Be sure the rug lies flat under furniture.

2. Rug cushions under rugs greatly increase their life expectancy and durability and make them seem luxuriously deep and soft underfoot. Cushions should be cut slightly smaller than the rug, to allow for spreading.

3. Rugs and carpets should be laid under tension, to avoid puckering. This is work for experts, not amateurs. Rust-proof tacks should be used for carpets. Large rugs can be "anchored" with special snap fasteners, similar to those used for fastening garments.

4. Lamp cords should never be run underneath rugs (page 90). If you feel that you must do this, however, special flat cords are available which do not make ridges in the rug.

5. Broken casters ruin rugs. Smooth, round steel protectors with prongs to be driven into the wood should be used on all wooden chair legs. Move heavy pieces of furniture occasionally to prevent permanent indentations, and to distribute wear.



Same rug, same bed, six months of use, but different casters. See how the wrong type (left) has ruined the rug.

6. *Never pull out tufts or knots.* If the twist on a few tufts loosen, making the rug look shaggy in that one spot, clip off the long ends with scissors, making them even with the rest. If tufts or knots are pulled out, holes are left and an expensive expert repair job must be done.

7. Turn a large rug end for end every few months to distribute wear more evenly.

8. *Never shake small rugs.* Shaking breaks threads, loosens knots, frays fringe, damages backing and tears the binding.

9. *Never hang large rugs over a line.* This bends fibers at a sharp angle while they are forced to carry the weight of the entire rug. The fibers are badly strained and may even break.

10. *Never beat rugs with a wire or rattan beater.* Severe beating loosens tufts, knocks the sizing out of the back and softens the whole supporting structure of the rug.

11. *Never try to shampoo or dry-clean a large rug yourself.* Thorough rinsing is an impossibility and a considerable amount of dirt soaks into the backing along with a residue of soap. Very shortly an

unpleasant rancid odor will become noticeable. When dry-cleaning preparations are used by amateurs on large rugs, some of the dirt is rubbed *into* the rug, and if all the chemicals do not evaporate they help to rot the fibers.

12. Cleaning large rugs is a job for experts. Be suspicious of "the cheapest rate in town" cleaners. It isn't cheap to have an expensive floor covering ruined by inexpert cleaning. Be certain the cleaning establishment you select is a member of the Rug Cleaners Institute of America. Inquire about the relative cost of having professional cleaners shampoo the rug on the floor, or at their establishment. Ask, also, whether there is an additional charge for re-laying the rug if it is taken away to be cleaned. Use the vacuum cleaner thoroughly on rugs before they are cleaned, to remove all loose dust and dirt.

13. Small rugs which cannot be immersed in water can be shampooed successfully at home, by using a commercial preparation according to directions or by following this procedure exactly:
    (*a*) Clean rug thoroughly on both sides with vacuum cleaner.
    (*b*) Add a few drops of ammonia to soap jelly (page 190). Whip jelly to stiff lather with egg beater, until no liquid is left.
    (*c*) Lay rug on table. Scrub a small area with stiff brush and lather, using a circular motion. Rinse with a cloth or sponge wrung out quite dry in clear lukewarm water, taking up all soiled lather. Rinse a second time in the same way. Go over the damp area with a dry cloth. Keep the rinse water clean.
    (*d*) Starting *within* cleaned area, scrub and rinse another small area. Repeat until entire surface is clean.
    (*e*) Dry the rug indoors or in the shade. See page 304 for washing instructions for washable rugs.

14. *Treat spots and stains at once.* Blot up most stains with clean blotting paper immediately, being careful not to spread the stain. Then dilute the stain with an application of clear, cool water and blot again. For fresh grease and oil stains apply an absorbent (page 315) several times. Remove all traces of the absorbent with the vacuum cleaner. Then apply carbon tetrachloride. Stain removal is discussed in detail on pages 182–183.

15. Dry air shortens the life of rugs and carpets. It also allows magnetic electricity to accumulate on the carpet sweeper. This electricity acts on the particles of woolly fuzz cast up by new pile rugs during the shedding process (page 177) and gives the impression

that the sweeper is either dropping dirt or failing to pick it up. Humidifying devices (pages 436–439) or air conditioning (page 439) overcome dry air during the winter months and prolong the life of all furnishings, including rugs.

16. Holes or tears in rugs caused by burns, moths or careless treatment should be repaired by an expert. Good rug-cleaning establishments offer this service.

17. Moth prevention is discussed on page 379.

18. Scatter rugs that are not anchored may cause injuries from falls (page 95). Place non-skid pads under such rugs, or paint the back of the rugs with skid-proof material.

19. File all identifying labels and the manufacturer's instructions for cleaning and care, and refer to them frequently.

Pile Rugs

New pile rugs always go through a *"shedding"* process which often alarms the homemaker who does not know that this must be expected. Cut-off ends of the nap which have fallen back into the pile during the shearing process have been left in the rug and come to the surface during the first few cleanings. This condition may persist for several weeks. The use of a vacuum cleaner during this period is recommended, as it gets the shedding process over with more quickly.

"Shading" is another situation which often causes concern to owners of pile rugs. Traffic, or constant pressure, flattens the pile, or makes it slant in one direction. Lights and shadows caused by this crushing make it appear that the rug is changing color in spots. A good rug cushion helps to prevent excessive flattening of the pile, and a good vacuum cleaner helps to straighten crushed pile and lessen "shading." Turning the rug end to end as often as every three or four months distributes wear more evenly. "Shading" is unavoidable, and need not cause anxiety.

The natural slant of the pile is called the "lay." If your rug is plain, shading will be less apparent if the lay is pointed away from the light. Colors and patterns look stronger and darker if the lay points toward the light.

Care of Pile Rugs

Daily: Remove surface litter with the carpet sweeper or vacuum cleaner.

Weekly: Clean the rug with the vacuum cleaner two or three times a week (page 131). Get at the hidden places (under the piano or davenport, for example). Clean the edges thoroughly. If the floor is completely carpeted, use the narrow suction tool around the edges.

Occasional: Remove spots and stains at once (page 182). Twice yearly, roll up large rugs and clean the floor underneath thoroughly (page 143). Replace the rug and vacuum thoroughly. Reverse the rug and vacuum the wrong side. Lay right side up again and re-vacuum. Professional cleaning or shampooing by experts should be done as often as necessary.

Oriental Rugs

Beautiful Oriental rugs are a source of great pride to their owners. They are made to stand hard treatment, but not abuse, and good care is necessary to maintain their beauty and to keep their soft, glowing colors free from dimming dust and grime. If the rugs are antique and in a poor state of preservation it is best to use the suction tool of the vacuum cleaner to clean them, rather than the cleaner itself.

Care of Oriental Rugs

Daily: Remove surface litter with the carpet sweeper or vacuum cleaner.

Weekly: Use the vacuum cleaner two or three times a week.

Occasional: An annual cleaning by experts is essential. Tears and holes can be mended by skilled craftsmen so that they cannot be detected.

Sculptured and Textured Rugs

See Pile Rugs (page 177) for directions as to care.

Hooked Rugs

We need to understand a little about how hand-made hooked rugs are made, in order to care for them intelligently. The foundation is a special type of burlap. The hooked loops are drawn through the coarse weave of the burlap. Rags of cotton and sometimes wool are used for hooking.

Modern, machine-made hooked rugs, in muted colors and authentic old designs, are sturdier in construction than hand-made hooked rugs

but they also deserve special consideration when they are cleaned.

One cardinal rule is this: *Never shake or beat a hooked rug.* The sharp strain of shaking is apt to break the burlap foundation, and either process loosens the loops.

Care of Hooked Rugs

Daily: Sweep with a stiff broom or use the carpet sweeper.

Weekly: Clean the rug thoroughly with the vacuum cleaner. On small rugs, run the cleaner diagonally across the rug and off the edge, so that the suction will not lift or roll up the rug (see illustration, page 174).

Occasional: Send room-size or large hooked rugs to a professional cleaner. Small hooked rugs may be shampooed (page 176).

Cotton Rugs

(Rag rugs, string rugs, cotton chenille rugs and braided mats.)

Care of Cotton Rugs

Daily: Remove surface litter with the carpet sweeper.

Weekly: Sweep thoroughly on both sides with corn or fiber broom.

Occasional: If the colors are fast, cotton rugs may be laundered at home (page 304) or sent to a good commercial laundry as often as necessary.

Fur Rugs

Care of Fur Rugs

Daily: Sweep with a stiff broom.

Weekly: Clean thoroughly with straight suction-type vacuum cleaner or motor-driven agitator cleaner *with the brush removed.*

Occasional: Send to a reliable establishment for dry cleaning and reconditioning. Protect from moths during summer months (page 379).

Grass, Fiber and Sisal Rugs

Grass rugs, as their name implies, are woven of grass found in prairie marshes. The grass is wound with cotton strand into twine, and woven into rugs. Colors are applied with paint, and most manufacturers protect the design with a coat of varnish. Some grass rugs

have a woven geometric design made by using cotton warp in various colors.

Fiber rugs are made of fir or spruce wood fibers. In some of these rugs the patterns are woven, and the rugs are reversible; in others the pattern is applied with a stencil and paints.

Sisal rugs are made of sisal fiber which is extremely tough, heavy and hard-wearing.

Care of Grass, Fiber and Sisal Rugs

Daily: Remove surface litter with the carpet sweeper.

Weekly: Clean thoroughly with the vacuum cleaner.

Occasional: At least four times a year roll up the rug and clean the floor underneath thoroughly (page 143). Replace the rug, and vacuum thoroughly. Reverse the rug, and vacuum the wrong side. Lay right side up again and revacuum. Or take the rug outdoors, lay it flat and sweep thoroughly on both sides with a stiff broom. Professional cleaning is recommended for large or room-size rugs. Smaller rugs may be shampooed with a special soapless lather or cleaned with a non-flammable dry cleaning fluid such as carbon tetrachloride. Faded fiber rugs can be given a coat of paint. Thin good quality house paint with turpentine, using 1 part turpentine to 3 parts paint. Work the paint thoroughly into the fiber with a paint brush. Protect the surface underneath with a thick padding of newspapers.

Mixed Rayon and Wool Rugs

A brand new development in the rug industry is a rug made of a special blended yarn composed of rayon and wool. The "lay" (page 177) of the pile exposes surfaces to light in many different directions, thus creating a novel texture.

This type of rug is not suitable for installation where harsh treatment or abuse is anticipated, but under conditions of ordinary use and proper care, it will give good service.

The daily and weekly care of these rugs is the same as for pile rugs (page 177). The manufacturer supplies a hand comb for special grooming, and recommends that the vacuum cleaner be used not oftener than every two weeks.

Soap solutions must not be used for shampooing these rugs and the manufacturer recommends that professional cleaners use a sulphinated alcohol preparation for cleaning.

Rayon Rugs

Rugs made entirely of specially prepared rayon fibers of uniform length have recently appeared on the market. They require the same care as Pile Rugs (page 177). Rugs made entirely of rayon are not subject to attack by moths.

Hair Felt or Punched Hair Rugs

Another new development in the rug manufacturing world is the close-textured, napped carpet of all hair construction. The hair is punched through two layers of burlap and tied with latex. The fabric is then made into rugs and carpeting. This type of carpet is comparatively inexpensive and will stand hard wear.

The care is the same as for Pile Rugs (page 177).

Stair Carpeting

Stair carpeting receives severe usage which demands heavy dense pile and stair cushioning or heavy padding underneath. It is wise to leave an extra allowance at one end to allow for shifting the carpeting from time to time to equalize wear.

The care of stair carpeting is the same as for Pile Rugs (page 177). For thorough cleaning use the brush attachment of the vacuum cleaner or a hand vacuum cleaner.

Scatter Rugs

Run the vacuum cleaner diagonally across the rug and off the edge, so that the suction will not lift or roll up the rug (see illustration, page 174). Clean both sides of the rug.

Fringe

Face the vacuum cleaner toward the edge of the rug. Raise the nozzle so that the cleaner will glide over the fringe up to the edge of the rug. Lower the nozzle and pull it back toward you, over the fringe. This procedure will comb the fringe straight and remove tangled dust and litter.

Care of Rug Cushions

Rug cushions should be thoroughly cleaned at least twice a year. Use a straight suction-type vacuum cleaner, or a motor-driven agitator

cleaner *with the brush removed.* Clean the floor under the cushion thoroughly at the same time (page 143).

Unless the rug cushion is guaranteed mothproof, or made of material which is not attacked by moths or other insect pests, inspect it often for signs of infestation (pages 355–357 and 368–379).

Common Stains on Rugs and Carpets

(See also pages 321–325)

Removing spots and stains from rugs is complicated by the fact that a pad cannot be used underneath to absorb the soil loosened by the reagent. However, clean white blotting paper can be applied to the surface after using the reagent, to blot up excess moisture and soil.

Old stains or stains made by fruits, medicine, dyes, etc., must be given professional treatment.

When soap and water are used for spot removal, be careful not to get the rug too wet. Be sure to rinse thoroughly, and to brush the pile erect while it is damp.

Type of Stain	*Treatment for Removal*
Animal Stains	Treat immediately. Sponge with salt solution (¼ cup salt to 1 pint water), then sponge with ammonia solution (1 part ammonia to 20 parts water). Specific cleansers for animal stains are available.
Blood	Blot up as much as possible with clean blotting paper or absorbent cloth, being careful not to spread stain. Sponge with a cloth dampened with cold water. Brush pile erect while still damp.
Candle Wax	Scrape off as much as possible with a spatula or dull knife. Sponge with carbon tetrachloride.
Candy	Sponge with clear warm water.
Chewing Gum	Rub with piece of ice until gum gathers in a ball. Sponge any remaining traces with carbon tetrachloride.
Chocolate	Scrape off excess with spatula or dull knife. Sprinkle with powdered borax, moisten with cold water. Remove with damp cloth. Brush up borax when dry.
Cocktails	Sponge at once with cloth wrung out of mild soapsuds. Rinse with cloth wrung out of clear water. Brush pile

Cocktails	erect while damp. Fruit juice cocktail stains are difficult to remove and may require professional treatment.
Coffee and Tea	
Clear	Sponge with cloth wrung out of mild soapsuds. Rinse with cloth wrung out of clear water.
With cream	Sponge with carbon tetrachloride.
Grease and Oil	Sponge with carbon tetrachloride. If color remains the spot will require professional treatment.
Ink	Blot up as much as possible with clean blotting paper or absorbent cloth, being careful not to spread the stain. Sponge with lukewarm water. Sponging with milk is effective for some kinds of ink, but the milk must be removed by sponging with carbon tetrachloride. Stubborn ink stains require professional treatment.
Milk	See Grease.
Mud	Allow to dry *thoroughly,* then brush out.
Paint	If fresh, sponge with turpentine. Old or stubborn paint stains require professional treatment.
Salad Dressing	See Grease.

CHAPTER XVI

CARE OF FURNITURE

Furniture strikes the keynote of a home. If the wood surfaces are dull or marred, and if the upholstery is soiled, the whole house takes on a dreary appearance. If the wood gleams with polish and if the upholstery is clean and bright, the house shines in reflected glory.

Beautiful lines cannot wholly redeem a neglected piece of furniture. On the other hand, intelligent care can redeem an otherwise nondescript chair or table.

Hot dry air is bad for wood furniture, causing it to dry and crack, while excessive humidity makes it swell. Keep fine pieces away from open windows and sources of artificial heat.

Protect table surfaces from ruinous effects of carelessness and accidents. Use pads under hot dishes, provide coasters for beverages, and place capacious ashtrays in many strategic locations.

FINISHED WOOD FURNITURE

The care of wood furniture is surface care, and the kind of wood has no bearing on it. The main essential is to feed *the finish*. Unfortunately there are no short cuts in furniture care. "Elbow grease" is still the essential ingredient in building up a beautiful surface.

Furniture is almost always finished with varnish or lacquer. Wax is often applied, in addition. Shellac is used only on custom-grade furniture, and is the basis for French polishing—a hand-rubbed finish applied at the factory. The new fine quality synthetic resin varnishes produce an exceptionally satisfactory and beautiful finish which is resistant to heat, water and alcohol.

It is impossible for the purchaser to tell what finish has been applied. Sometimes experts find it difficult, if not impossible, to determine this point. Occasionally salesmen can give you the correct information at the time of purchase.

Regardless of the finish, three types of care are essential to wood furniture: (1) regular dusting, (2) polishing, and (3) special treatment such as removing heavy soil and making minor repairs.

Dusting

Most of us dust furniture every day without thought as to whether or not we are dusting correctly. But there is a right way and a wrong way, and if we value the life and looks of wood furniture, it is important to use the right method:

1. Use a soft, clean lintless duster made of cloth or specially treated paper. (For homemade treated dusters, see page 136).
2. Dust with even strokes, gathering the dust into the cloth instead of scattering it about.
3. Use a soft brush to dust carvings.
4. Precautions
   (*a*) Harsh dusters scratch wood surfaces.
   (*b*) A dirty duster is worse than none at all, because it soils and scratches as it dusts.
   (*c*) Never use a heavily oiled duster. It leaves a dust-catching film.
   (*d*) Never use a damp cloth. It may cloud the surface.

Polishing

Great controversy exists among the experts concerning the best materials and methods for polishing. Some say, for example, that raw or boiled linseed oil gives the best results for all finishes, while others say just as dogmatically that its use is limited, since it has no value for a lacquered finish. On two points, however, the experts agree: (1) surfaces must be clean and free from dust before they are polished, and (2) results depend on rubbing. We are inclined to believe that if these two points are heeded good results can be obtained with any one of the polishes listed further on.

There are a few general rules about polishing which apply no matter what type of polish is used:

1. It is not necessary to apply polish more than two or three times a year, if in-between care is given (see "Rubbing," page 187).
2. Apply polish sparingly with a clean soft cloth or clean cotton waste.
3. Let stand 15–20 minutes.
4. Rub with a clean soft cloth, with the grain of the wood, until no polish is visible on the surface.
5. Rub to a satiny finish with a soft flannel polishing cloth, following the grain of the wood.

6. Apply polish to carved wood with a soft brush. Be sparing of the amount of polish or a sticky accumulation will remain in the crevices. Use a stiff brush covered with flannel for the first polishing, then buff with a flannel polishing cloth.

7. *Precautions*

   (*a*) A dirty cloth used to apply polish or for rubbing will soil and darken the surface.

   (*b*) Unabsorbed polish left on the surface will cause a cloudy appearance and pick up dust. Test the surface with your fingertip. When it is properly polished a clean dry finger will leave no trace.

The following polishes will give good results if properly applied:

1. *Furniture polish* imparts a high luster to wood. Select polish of good quality. Apply it lightly in a very thin film. Let it dry. Polish (page 185).

2. *Lemon oil:* Apply oil in thin film. Let stand at least 15 minutes. Take up excess with soft cloth or cotton waste. Polish (page 185).

3. *Liquid or paste wax* gives wood surfaces a soft luster. Wax is available in different colors. If the wood is light, you may prefer a light-colored wax. Apply sparingly. Let stand at least 15 minutes. Polish (page 185). Do not use self-polishing wax.

4. *Raw linseed oil and turpentine:* Mix equal parts of raw linseed oil and turpentine. Apply sparingly. Let stand at least 15 minutes. Polish (page 185).

5. *Hard wax:* Certain experts recommend the use of a hard wax such as that used for automobiles. It is applied according to the directions for its use on automobiles and imparts a high luster. The cleaning preparation used on automobiles before the hard wax is applied may also be used to clean furniture.

Washing

Occasionally it is necessary to wash furniture to remove a sticky film of dirt. Several methods are recommended:

1. *Soap and water:* Make a light lather, using mild soap and lukewarm water. Wring a soft cloth out of this lather and go over a small area. Rinse with a cloth wrung out of clear water. Dry with a soft cloth. Repeat, starting within the clean dry area. Polish immediately (page 185).

2. *Furniture wash:* Add 3 tablespoons linseed oil and 1 tablespoon turpentine to 1 quart hot water. Mix thoroughly. Let cool. Wring a soft cloth out of this solution. Wash a small area. Dry immediately with a soft cloth. Repeat until entire surface is cleaned. Polish by rubbing with the grain of the wood.
3. *Old wax* can be removed by applying liquid wax freely and wiping off while still wet. The fresh wax dissolves the old wax beneath, just as fresh liquid nail polish dissolves an old nail polish coating.

Rubbing

Between polishings, wood surfaces should be rubbed often to build up the desired luster. Use a soft flannel polishing cloth and rub with the grain of the wood until the surface is lustrous and the beauty of the grain is brought out. The formula for success is persistence, pressure and elbow grease!

Special Care

Reviving the finish: If an article of furniture has been neglected and is badly soiled, a little patience will restore the surface to a gleaming luster:

1. Dust thoroughly (page 185).
2. Wash off the dust-caked polish or wax with mild lukewarm soapsuds (page 186) or furniture wash (above). If the surface is extremely soiled, add more turpentine to the wash and *test it* first on an inconspicuous area to see whether it does any damage, because too much turpentine will soften varnish.
3. If the surface still looks soiled, dip a soft cloth in lemon oil, then in rottenstone or powdered pumice and rub it over a small area, in the direction of the grain. Wipe off immediately with a cloth dipped in raw or boiled linseed oil, using light strokes and working in the direction of the grain. Repeat, covering a small area each time. Rub with a flannel polishing cloth.
4. Repair scratches, burns, etc. (pages 188–189).
5. Give the surface a final polishing if necessary (page 185).

Minor Repairs

White watermarks

1. If the surface is waxed, remove the old wax with liquid wax (above) and apply a fresh coat.

2. For other finishes, rub with rottenstone or powdered pumice and raw or boiled linseed oil, in the direction of the grain. Or rub lightly with a cloth dampened in water to which a few drops of ammonia have been added. Or rub with oil of peppermint on a damp cloth. Rub dry with a soft clean cloth. Polish (page 185).

Alcohol stains: (Perfumes, medicines and beverages containing alcohol dissolve varnish or shellac.)

1. *Fresh stains:* Wipe up immediately, then rub spot quickly with fingers or oiled cloth.
2. *Neglected stains:* Mix rottenstone or powdered pumice and lemon oil to a creamy paste. Apply paste with a soft cloth, rubbing with a circular motion. Wipe up immediately with a cloth dampened with lemon oil. Wipe dry with a clean soft cloth. Rub with a flannel polishing cloth. If this treatment does not help, refinishing may be necessary.

Heat marks

1. *On varnish or shellac finish:* Dampen a cloth with spirits of camphor or essence of peppermint; daub on spot. Let dry thoroughly. Polish (page 185).
2. *On lacquer or synthetic resin varnish:* Rub with rottenstone or powdered pumice and linseed oil (raw or boiled) in the direction of the grain.

Scratches

1. *On waxed surface:* Sometimes rubbing with wax or a cut piece of walnut meat or Brazil nut meat will make a light scratch disappear. If not, brush scratch carefully with turpentine. Let dry. Apply fresh wax. Polish (page 185).
2. *On polished surface:* Rub extra polish into scratch to darken it. Deep scratches may be darkened by applying a matching wood stain with a fine brush. Iodine will often darken the scratch satisfactorily. After the stain is dry, apply white shellac with a fine brush until crack is filled, letting each application dry thoroughly. Then polish (page 185).
3. *Severe scratches:* Wrap fine steel wool (size O) around the point of a wooden skewer or orange stick. Rub the scratch with the steel wool, being very careful not to mar the surrounding surface. Brush thoroughly with a soft brush to remove scrapings. Apply turpentine with a soft lintless cloth. Let dry. With a fine paint brush carefully

apply a very thin coating of white shellac. Let dry. Apply additional coats of white shellac in this way until the desired color is obtained and the scratch filled. When the last coat is dry, rub to a polish.

Candle Wax: Remove surplus with a piece of stiff cardboard. Sometimes the residue can be washed off with warm mild soapsuds. If not, dry thoroughly and rub with a cloth dampened with carbon tetrachloride. Polish (page 185).

Fog or Bloom: Sometimes a grayish blue "fog" or "bloom" appears on the surface of highly polished wood furniture. This is usually due to oil in an older type of varnish finish. To remove this, apply liquid wax, which removes the oil, then polish.

Burns: Light surface burns will sometimes disappear if the spot is rubbed with the polish ordinarily used, followed by rubbing with a flannel polishing cloth. The rottenstone and linseed oil treatment (page 188) is often effective. If the burn is deep, refinishing the whole surface may be necessary. The appearance can be improved somewhat by using the method suggested for severe scratches (page 188).

Ink Spots

1. *Fresh:* Blot up surplus, being careful not to spread the ink. Press a damp cloth firmly on the spot. Do not rub. Repeat until the spot disappears. Polish (page 185).
2. Ink on *varnished or lacquered surfaces* that have not been waxed will wash off easily.
3. *Old* ink stains or ink stains that have stained the wood itself require professional treatment.

Paint Spots

1. *Fresh:* Remove immediately with mild warm soapsuds. Polish (page 185).
2. *Old:* Cover spots with linseed oil; let stand until paint is softened. Remove any remaining paint by rubbing with rottenstone and linseed oil (raw or boiled), mixed to the consistency of thin cream.

Grease Spots: Wipe off with cloth dampened with carbon tetrachloride. Polish (page 185).

"Checked" or Crackled Varnish (an all-over criss-cross of hairline cracks): A professional refinishing of the entire surface is the only remedy for this condition.

UPHOLSTERED FURNITURE

It is an expensive mistake to allow upholstered furniture to become badly soiled. Light surface soil which does accumulate slowly, despite regular cleaning, can be removed from certain fabrics by home methods, but deep soil calls for professional care. Greasy soil and perspiration, if allowed to remain on the fabric, will affect the dye, and there is no remedy except reupholstering or slip-covering to hide the damage.

The necessity for shampooing can be staved off for long intervals by regular care. It is sometimes necessary to brush the exposed surfaces every day with a whisk broom or upholstery brush. At least once a week the correct attachment of the vacuum cleaner should be run slowly over all exposed surfaces. Use the brush attachment for napped upholstery and the suction tool for smooth fabrics. Once a month, or oftener if necessary, a thorough cleaning is in order:

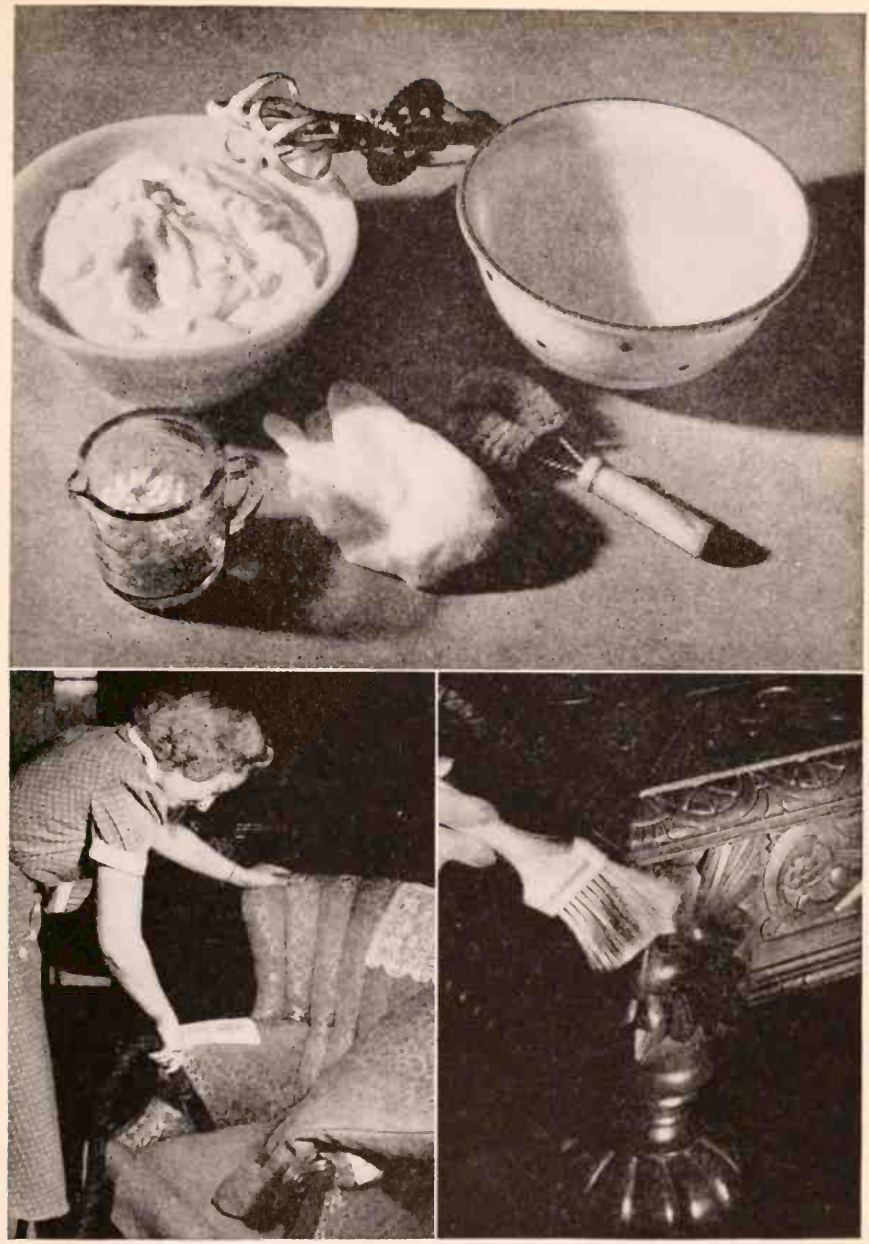
1. Remove all cushions. Clean them on all sides, using the correct attachment of the vacuum cleaner unless they are down-filled (the suction is apt to pull the down through the fabric).
2. Run the vacuum attachment slowly over the entire surface of the chair or davenport, not neglecting the backs, or fabric underneath.
3. Use the slender suction nozzle to get down into all crevices.
4. Replace the cushions.

Shampooing

Do not attempt to shampoo velvet, velour or other pile fabrics, with the exception of mohair. They require professional attention. Fairly flat fabrics such as rep, denim, tapestry, frieze, washable glazed chintz, linen, etc., can be shampooed if the color is fast. Test the effect of soap lather on an inconspicuous area to see whether it affects the color in any way.

If the color is fast, and your courage high, proceed along the following lines:

1. Clean the upholstery thoroughly with vacuum cleaner attachments (above).
2. Dissolve ½ cup mild soap in 1 quart boiling water. Cool until jellied. Beat the jelly to a stiff lather with a rotary egg beater. Be sure *no liquid* is left.
3. Scrub the lather over a small area with a soft brush, using a circular motion. Be careful not to get the filling wet.



Top and lower right: Photographs by William H. Zerbe

Top: Make a stiff, dry soap lather for shampooing upholstery (see page 190).
Lower left: Use the flat tool attachment of the vacuum cleaner to get at deep crevices in upholstered furniture.
Lower right: Use a soft brush to dust carved wood furniture.

4. When the lather looks soiled, scrape it off with a spatula. Remove the last traces with clean cheesecloth or a cellulose sponge wrung out of clear lukewarm water until barely damp.
5. Repeat, starting within the cleaned area. Change the rinse water and cloth as soon as soiled.
6. Brush mohair pile fabric with a whisk broom while it is damp, brushing in the direction of the pile. When it is dry, brush against the pile.
7. Hasten the drying by using an electric fan or the blower attachment of a vacuum cleaner.
8. Keep the piece of furniture out of use until it is thoroughly dry.
9. If greasy spots remain, sponge with carbon tetrachloride (below).

You may prefer to use one of the commercial soapless lather preparations for shampooing furniture. If so, follow the manufacturer's directions. If the upholstery looks dusty after it is dry, it is probable that some of the dirt removed by the shampoo has been left on the surface. Brush thoroughly or use the dusting attachment of the vacuum cleaner.

Professional cleaning by a reliable establishment is most satisfactory. Many concerns will send an expert to your home to do the cleaning, if you do not wish to send the article to them.

Spots and Stains on Upholstery

It is not easy to remove spots and stains from upholstered furniture, because it is impossible to get a pad under the spot to absorb the stain as it is sponged. Furthermore, the stain removal reagents may affect the color or texture of the upholstery.

Fresh grease spots can sometimes be removed by sponging with carbon tetrachloride. (See page 317 for technique to use in sponging.) Or, if the fabric is washable, the spot can be shampooed (page 190). However, if there is a layer of soil over the whole surface, the cleaned area may be even more conspicuous than the spot.

It is best to call in an expert to remove spots and stains, but if you wish to try to remove them yourself be sure to test the reagents on an inconspicuous section of the upholstery first. On page 321 you will find a chart listing common stains and methods of removal.

Two methods are recommended for *raising flattened nap on mohair pile* upholstery:

1. Wring a cloth out of very hot water, getting it as dry as possible. Spread it over the flattened area and leave it for 5–10 minutes. Re-

move the cloth. Brush while still damp, against the direction of the nap. Brush again when dry, with the direction of the nap.

2. Wring the cloth out as above and place it over the flattened area. Hold a warm iron over the cloth until it is dry. Do not exert any pressure. Brush as above.

Leather Upholstery

Leather is affected adversely by heat and excessive dryness or dampness. Furniture upholstered with leather should therefore be kept away from radiators, registers and other sources of artificial heat, and open windows in damp weather. During months of the year when the house is heated, leather should be given a conditioning treatment often.

Dust leather upholstery with a clean, soft *untreated* duster every day. Once a month or oftener go over the surface with a pad of dampened cheesecloth, changing the surface of the pad as soon as it becomes soiled. Polish dry with a cheesecloth pad.

When leather becomes soiled it may be washed with a special leather soap, following the manufacturer's directions, or with mild soapsuds. Rinse with a damp, clean cloth, and dry with a soft cloth. Always follow washing with a conditioning dressing unless you are using a preparation which both cleans and conditions. Certain manufacturers make both leather soap and leather dressing, with directions for their use. There is also a product made of emulsified vegetable oils which cleans, softens and preserves all types of leather except suede. This preparation keeps leather soft, strong and pliable. It will not harm wood or paint, but rugs and carpets must be protected when it is used.

Never use furniture polish, or oils, varnish, shellac or wax on leather upholstery.

Imitation Leather Upholstery

Prevent excessive soiling by daily dusting with a clean soft *untreated* cloth.

Wash occasionally with a cloth or sponge wrung out of mild lukewarm soapsuds. Rinse with a clean cloth or sponge wrung out of clear lukewarm water. Dry thoroughly with a soft cloth.

OTHER TYPES OF FURNITURE

Reed, Rattan, Wicker and Cane

Reed: Reed is the inside core of rattan. Furniture made of reeds is usually enamelled, varnished, or painted. Regular dusting with a brush

or the brush attachment of the vacuum cleaner will keep it in good condition. If washing is necessary use mild lukewarm soapsuds applied with a cloth or brush. Rinse with a cloth wrung out of clear lukewarm water.

Rattan: Rattan has a natural high gloss and is seldom finished, although it is sometimes enamelled. After the natural gloss has disappeared, it may be varnished. Its care is the same as that for reed furniture.

Wicker: Keep wicker furniture well dusted with a brush or the brush attachment of the vacuum cleaner. If washing is necessary add 1 tablespoon household ammonia to 1 quart warm water and apply with a brush. Rinse with a cloth wrung out of clear lukewarm water.

Cane: Cane is made from the outside strips of rattan, and is mainly used for chair seats and panelling. It has a natural gloss, and its care is the same as that for reed furniture.

Painted

Wood or metal furniture that is finished with good quality washable paint is easy to care for. Of course it must be dusted regularly with a clean, soft *untreated* duster, and occasionally it will benefit by damp dusting with a soft cloth wrung almost dry of clear lukewarm water.

Excessive soil may be removed with mild scouring powder or the whiting cleaner described on page 158, or with a good commercial paint cleaner.

Wrought Iron

The care of furniture made of wrought iron is the same as that for accessories made of this metal (page 211).

Chromium Plated and Stainless Steel

Tubular metal frames made of chromium-plated steel will resist rusting unless they are unduly exposed to salt air or severe weather. Daily dusting with a soft cloth is usually all that is necessary. Fingerprints can be rubbed off with a dry or lightly dampened soft cloth. Never use harsh scouring powders or steel wool.

Stainless-steel tubing is highly resistant to corrosion. An occasional cleaning with a mild scouring powder and water improves its appearance. Daily dusting is necessary of course. Do not use harsh abrasives or steel wool.

Plastic

A well-rubbed thin coat of wax may be used as a finish for furniture made of plastic materials, if desired. Daily dusting, plus an occasional cleansing with mild lukewarm soapsuds, is all that is necessary to keep this type of furniture looking its best.

Rustic

Rustic furniture must be protected against damage from insects that attack wood. A coat of good varnish each season helps. Seasonal storage of rustic furniture is discussed on page 69.

CHAPTER XVII

SPECIAL CLEANING PROBLEMS

While it is true that the very things that make a home attractive and livable—mirrors, pictures, books, lamps, fireplaces, etc.—all present special cleaning problems, the actual cleaning is not difficult, and the reward is well worth the effort.

Mirrors

Frequent dusting keeps mirrors clean for long intervals, but occasionally they need additional care. The same materials are used that are recommended for window cleaning (page 169), but special care must be used in applying them.

For instance, when liquids are used, not a single drop must be allowed to fall on the wood frame. Alcohol, for example, will spot certain wood finishes. The solution is applied sparingly, using overlapping strokes, and the mirror is dried immediately.

If whiting or fine scouring powder is to be used, clean the mirrors before the room is cleaned, in case the powdery substance scatters on floor or furniture.

Paint or varnish spatters should be softened with turpentine or denatured alcohol, then removed with a dull knife or spatula. Be careful not to get turpentine or alcohol on the frame if it is painted or varnished.

Resilvering must be done by professionals whenever it is necessary.

Pictures

Pictures should be taken down frequently and dusted thoroughly, front, back and frame. Dust the wall behind them too, so that the ominous black outline made by dust will never have a chance to form.

Occasionally, the glass which protects the picture will need a cleaning. The same methods, materials and precautions that apply to mirrors apply here also.

Never attempt to clean oil paintings at home. If something more than careful dusting is needed, send the painting to an expert.

Picture frames made of wood need waxing or polishing occasionally, and the methods and materials are the same as for wood furniture (page 184). Gilt frames need gentle treatment. Moisten a pad of cheesecloth with a solution made of equal parts of ammonia and denatured alcohol. Apply it to a small area of the frame with the least possible pressure. Use a dry pad to take up the soil, then proceed to the next area. Once or twice a year pat a little lemon oil gently on the gilt to keep it from drying and cracking. Never rub.

Lighting Fixtures

A coating of dust on light bulbs and globes reduces the amount of light to a considerable degree. It is economical therefore, to keep bulbs and globes clean so that you get the amount of light you are paying for.

Before the fixtures themselves are cleaned, turn off the current and remove shades, bulbs, etc. Then use the dusting tool of the vacuum cleaner or a duster to clean the fixture.

Wipe the bulbs with a damp cloth, being careful not to get the metal section wet. Dry thoroughly. If the bulbs are extremely dirty, hold each one by the metal end and dip the glass in warm soapsuds. Rinse in clear water in the same fashion. Dry carefully with a clean soft cloth. Always be certain that the bulbs are perfectly dry before replacing them.

If the bulbs still look very dark after they have been cleaned, they should be replaced with new ones.

Lamp Bases

Lamp bases should be cleaned according to the material of which they are made. Never immerse the base in water.

Porcelain, pottery or stone bases may be cleaned with a cloth wrung out of soapsuds and rinsed with a cloth wrung out of clear water. Use a soft brush to clean crevices.

Dresden china bases require delicate handling. Use the same materials as for porcelain but do not rub.

Metal bases are usually lacquered at the factory, and harsh cleaning or polishing materials remove this protective film. Frequent dusting with a soft cloth and occasional waxing with paste wax will keep these bases in good condition. Never use metal polish, furniture polish or abrasives. Replating when necessary must be done at the factory where the base was made.

Tole (painted metal) bases: Mix 1 part turpentine with 10 parts mineral oil; apply with soft cloth. Wipe off thoroughly with a clean soft cloth.

Crystal bases: Add a few drops household ammonia to clear water. Apply with a soft cloth. Rinse with cloth wrung out of clear water. Dry thoroughly.

Marble and onyx bases: Dampen a soft cloth with raw linseed oil; wipe off thoroughly, with a clean soft cloth. Rub with a small quantity of paste wax to restore luster.

Lamp Shades

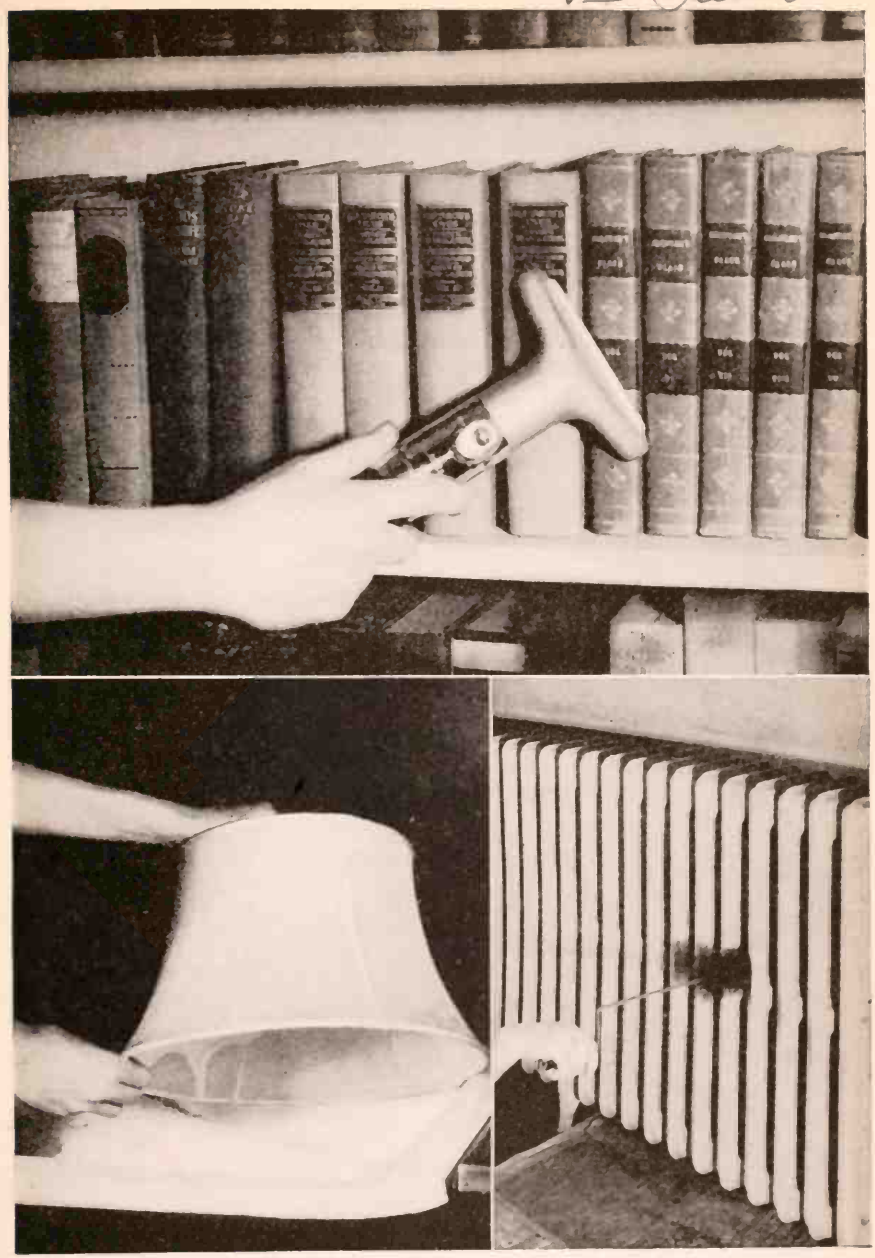
Lamp shades must be kept free from dust or light will be reduced. They should be brushed thoroughly once a week, inside and out, with a soft brush or with the soft brush attachment of the vacuum cleaner. Special cleaning depends upon the material of which the shade is made. *Note:* Always remove cellophane wrapping from a new shade, before it is used. Heat and atmospheric conditions shrink the cellophane and cause it to warp and wrinkle the shade. An exception to this rule occurs when shades are made with a metal compensating ring which prevents the shade from buckling under the cellophane.

Silk or rayon shades should be dusted with a soft brush or with the soft brush attachment of the vacuum cleaner. This type of shade, even if pleated, can be washed *if the fabric and trimming are sewed to the frame,* and if contrasting trimming is color-fast. If the rims are heavily soiled, scrub them with a soft brush and mild soapsuds, before washing the shade. Washing and drying must be done quickly to prevent the wire frame from rusting and staining the fabric. Dip the shade up and down in lukewarm soapsuds made with mild soap, until clean. Rinse by dipping up and down in clear lukewarm water. Change the rinse water three or four times until it remains clear. Dry the shade as rapidly as possible without the aid of either direct sunlight or any source of artificial heat which might harm the fabric. An electric fan may be used to speed drying, and the shade should be turned frequently during drying so it will dry evenly. Don't forget to turn it upside down as well as round and round. Of course these shades may be dry cleaned if preferred.

Hand painted silk shades must be dry cleaned.

Pasted or glued shades cannot be washed or dry cleaned.

Linen, chintz and homespun shades cannot be washed because of shrinkage. They can be dry cleaned successfully.



Photographs by William H. Zerbe and Patricia Hall

Top: Dust books with the soft brush attachment of the vacuum cleaner.
Lower left: Silk lampshades may be washed in mild soap suds if the fabric is sewed, not glued, to the frame.
Lower right: Brush the coils of exposed radiators with a downward stroke and collect the dust on damp newspapers beneath.

Genuine parchment shades are cleaned with neat's-foot oil or a mixture of 1 part turpentine and 10 parts mineral oil.

Vellum or imitation parchment shades should be cleaned occasionally with liquid wax or turpentine. Protect the pasted edge when cleaning, as this cannot be repasted. If it comes loose, a bias fold may be hand-sewed over the edge of the frame.

Metallic paper shades: Mix 1 part turpentine with 10 parts mineral oil; apply with soft cloth. Wipe off thoroughly.

Cork shades must be dry cleaned.

Thermoplastic shades, made from translucent cellulose plastic material, may be washed if cordings and decorations are removed. Pleated shades should be unpleated, and laid flat for washing. Use cold water and mild soap. Rinse with a cloth wrung out of clear cold water; dry thoroughly.

Sun Lamps

Sun lamps are of two types: carbon arc, and mercury arc.

The *carbon arc* lamp must be kept free of the soot-like deposit which is a product of combustion. Use a soft cloth to brush out this deposit which forms around the top where the reflector is closed.

Never touch the bulb element of a *mercury arc* lamp with the hand or fingers, as oil from the skin deposited on the bulb will be etched in when it is lighted and heated. When the bulb is cold it may be dusted with a soft cloth. Smudges on the bulb may be removed with a clean cloth moistened with denatured alcohol.

Telephones

Although the telephone in your home remains the property of the telephone company, you can prevent many petty annoyances by giving it good care.

First of all, place it where it is not apt to be knocked to the floor, as a bad fall may put it out of commission.

Keep the cord straightened, because a twisted cord wears out quickly and may present a shock hazard. The telephone company will provide a special cord which automatically coils up neatly when the receiver is replaced. There is an installation charge made for this cord but no rental fee.

The telephone cord should be protected from dampness, which shortens its life. Keep it away from leaky radiators, rain from open windows, wet umbrellas, etc.

Dust the telephone with a soft cloth each day.

If your telephone should get out of order, call or dial "repair service."

Always be sure to replace the receiver on the hook, or a hand telephone in its cradle, carefully. Failure to do this will give a busy signal to any one who attempts to call you.

Pianos

A piano is a big investment and valued far above its actual cost for the joy it gives to the fortunate family to whom it belongs.

For all of its size, a piano is one of the most delicate of instruments. It cannot endure neglect or ill treatment.

There are several rules which must be obeyed in giving a piano the care it deserves:

1. Never place a piano near a window. Sudden changes in temperature injure both tone and woodwork. If a piano is moved from one dwelling to another during the cold months of the year, never put it into a warm room. Let the room warm up gradually after the piano is moved in.

2. Never place a piano over a register or near a radiator, for the heat may dry and split the sounding-board beyond repair.

3. Protect the piano from extremes in humidity if possible. Dry air is harmful, but a portable humidifier should not be placed too near the piano. Don't ever be misguided enough to place a pan of water inside the piano, as some homemakers have done, to their sorrow. Dampness, as well as dryness, damages pianos.

4. Regular, expert tuning is imperative. Piano manufacturers recommend tuning three times a year, reminding us that pianos used on the concert platform are tuned before every performance. At three-year intervals, a piano should be "voiced." This voicing is equivalent to a general overhauling of an automobile, and should be done as religiously. The felt hammers are filed and renapped, the action is regulated, and the piano is cleaned inside. Consult your dealer for full information concerning this service.

5. The rich, gleaming exterior finish should be maintained in all its original beauty. For the past few years, piano manufacturers have been using a lacquer finish. A soft clean untreated duster is the only agent needed to clean this finish. Polishes and oils are not recommended.

Until five years ago, pianos were given a varnish finish. Furni-

ture polish, wax or lemon oil may be used on this type of finish with good results (page 185).

6. The yellowing of piano keys troubles many homemakers, but true ivory always yellows or darkens with age. Darkness hastens yellowing, so leave the keys exposed to light during the day.

   Clean ivory keys with a cloth moistened with denatured alcohol. Never use soap—it stains and darkens the ivory. Remember that excess moisture loosens the ivory from the key blocks.

Books

Dry air and dampness are both enemies of books. If the air is too dry, paper and leather turn brittle and crumble or crack, and bindings are loosened.

Excess dampness encourages the growth of mould and mildew which may ruin books beyond repair. It loosens glue and paste and weakens paper and leather. If your library is extensive, a portable humidifying device is a worth-while investment, to combat excessively dry air during the winter months. Air-conditioning systems or room units protect books the year round by creating humidity in winter and removing excess moisture from the air in summer (pages 436–439).

Without the help of a dehumidifying device in overcoming dampness the best we can do is to rub the books often during damp weather with a clean soft cloth, watching for signs of mildew. If mildew is discovered, its growth must be stopped immediately, and the only way to do this is to shut all windows and turn on artificial heat long enough to drive excess moisture out of the air. See page 205 for a discussion of the treatment of mildewed books.

Bookshelves should never be crowded, because, if the books are jammed together, bindings may be injured or even split, from pressure. On the other hand, books should stand straight on the shelves, and not be allowed to lean, no matter how much space there is, for leaning subjects the binding to severe strain. If the shelves are only partly filled, support the books with bookends. If books are too large to stand upright on the shelves, lay them flat. Never put them in at an angle. The shelves should be several inches deeper than the books and the books should be set well to the front of the shelves, to allow circulation of air around them. Never stack books in unsteady piles from which they may fall and be badly broken.

When you remove a book from the shelf, grasp it with your fingers on either side of the middle of the bound end, or tip it back gently by the top edge. Never pull it from the shelf by its fragile backing.

A homemade jacket of transparent tough material such as certain grades of cellophane or pliofilm and Scotch tape will protect the binding while a book is being read or carried from place to place.

Careless handling during dusting is one of the greatest hazards to which books are subjected. In spite of good intentions, books are banged about on cleaning days, and suffer injuries from which they never recover. No one likes the thought of dusty books, to be sure, but dust in itself is actually less harmful than rough handling, such as snapping back the covers or whirring the pages. One book at a time should be removed from the shelves and dusted with a soft cloth or the soft brush attachment of the vacuum cleaner. While the bookshelves are being dusted or washed the books should be laid flat in small piles, in a safe place. When the shelves are clean and dry, replace the books gently, one by one. Always be certain that the shelves are absolutely dry before books are replaced.

Very few people know how to handle a new book so that its back will not be broken during its first reading. A real book lover would never think of beginning to read Chapter I until he has gently adjusted the book to handling. The book should be placed on a flat surface with the binding resting on the surface and the fore edges up. First the front cover should be opened, and then the back cover. Now open a few pages, first from the back, then from the front, pressing gently along the inner margins so that there is no danger of breaking the binding. This is repeated until the center of the book is reached. Never "crack open" a new book.

The care and repair of valuable books are matters for experts and should never be attempted by amateurs. Their best intentions may result in a great deterioration in value, although the book itself is repaired. For example, one well-meaning lady had a first edition with a paper cover which became soiled. She removed it, and with loving hands made a rich silk brocade cover, thereby reducing the book's value from forty dollars to seventy-five cents!

Books whose value lies not in dollars and cents, but in the continued pleasure they might give if restored to usefulness, may be repaired at home. Patience and time are needed, if a good, workmanlike job is to be done. You will need the following materials:

1. Good quality library paste
2. Cheesecloth
3. Waxed paper
4. Rice paper

5. Transparent mending tape
6. Pencil
7. Ruler
8. Scissors
9. Heavy weight, for pressing
10. Paper cutter

Loose Pages

1. Fold the inner margin of the loose page back about ⅛ inch. Apply paste to the folded section. Insert the page; close the book; press with a heavy weight. *Or,*
2. Protect the page with paper, except for ⅛ inch along inner margin. Apply paste along the margin. Remove the covering paper and place the page in the book so that the pasted edge will stick to the next page. Protect the pasted edges with waxed paper; close the book; press with a heavy weight. *Or,*
3. Use transparent mending tape to attach the inner margin of the loose page to the next page.

Lost corners: Match the paper if possible. Place a corner of new paper under the torn page. Trace the outline of the tear. Tear the corner of the new page ⅛ inch beyond the marking. Apply paste to the extra ⅛ inch. Attach pasted edge. Protect the mended page with waxed paper on both sides. Close the book; press with a heavy weight.

Holes in centers of pages: Trace the outline of the hole on a piece of paper similar to the paper in the book, if possible. Tear out the outline about ⅛ inch from the marking. (A torn or bevelled edge is less bulky to work with than a clean-cut edge.) Apply paste carefully to the extra margin. Press page and paper together. Protect both sides of the mended page with waxed paper. Close the book; press with a heavy weight.

Torn Pages

1. Use transparent mending tape to hold torn edges together. *Or,*
2. Cut rice paper to the proper size. Apply paste to the torn edges; lay rice paper over the tear. Smooth carefully with a paper cutter to prevent puckering. Protect the page with waxed paper on both sides. Close the book; press with heavy weight.

For a bad tear, cut rice paper double the size of the page and fold

in the center. Apply paste sparingly in a narrow strip along all edges on both sides, of the torn page. Fit the fold of the rice paper over the long edge of the torn page. Press along all edges with a paper cutter. Protect the mended page on both sides with waxed paper. Close the book; press with a heavy weight.

Mildew: Prompt treatment is necessary, because mildew spreads rapidly and attacks the fiber. Brush off the spots, one a time, with a soft dry cloth or cleansing tissue. Discard the cloth as soon as it becomes soiled, or you may spread the damage instead of removing it.

If brushing does not remove the spots, try a soft cloth barely dampened with denatured alcohol.

If alcohol fails, sprinkle French chalk between the pages, close the book and leave it for several days. Brush off the chalk. If the mildew remains, nothing further can be done.

Damage by Insects is discussed on pages 355 and 381.

Book Bindings

Spots or soil on cloth bindings may sometimes be removed with an art gum eraser.

Hard, glossy bindings should be cleaned with a special lotion intended for this purpose. Your local library can undoubtedly give you information concerning this lotion.

If bindings become water-soaked and warped, rebinding is the only cure. Your library can recommend a good binding and repair service.

Leather-bound books need reconditioning every three or four years to feed the leather and keep it soft and pliable. Rare and fine books deserve professional care, but less valuable leather-bound books may be reconditioned at home. If the binding is trimmed with leather, protect the rest of the binding with accurately cut blotting paper, bringing it up to the edge of the leather.

A commercial preparation especially intended for reconditioning leather has been used successfully by several museums and libraries to keep leather-bound books in fine condition. It is packaged in a household size container with a brush for easy application, as well as in quarts and gallons for large libraries. This preparation will not stain or discolor leather.

A mixture of equal parts of neat's-foot oil and castor oil applied sparingly with a soft cloth or the fingers and rubbed gently into the leather is another recommended treatment. Several applications may be necessary, spaced several hours apart. Some authorities recommend the use

of purified petroleum jelly (high grade vaseline equal in quality to that for medicinal use) for leather reconditioning. Another preparation used with success for many years by one of the world's largest libraries is a soft salve made by warming pure anhydrous lanolin until melted and adding neat's-foot oil. The proportions by weight are 40 per cent lanolin and 60 per cent neat's-foot oil. The materials for all these formulas should be of U. S. Pharmacopœia grade, and may be purchased at a drug store or chemical supply house.

Any oil or grease will darken light-colored leathers to some extent, and may dull the finish slightly.

Fireplaces

During the season when fireplaces are in use, another special cleaning problem is added to the list.

Each morning the hearth should be swept and ashes emptied into the ash pit or disposed of safely (page 88). A new fire should be laid on the grate, with crushed paper, dry kindling, and logs.

Directions for cleaning tile, marble, terrazzo, slate, etc., will be found on pages 153–155.

Once or twice a year, special cleaning is necessary to remove smoke stains. The Federal Housing Administration recommends the following method for cleaning smoke-stained *stone fireplaces:* add 4 ounces of high grade yellow laundry soap to enough hot water to make a quart of soft soap; heat until soap dissolves; cool. Stir in ½ pound powdered pumice stone and ½ measuring cup household ammonia. Mix thoroughly. Remove as much smoky deposit as possible with a stiff brush. Apply a coat of the soap mixture with another brush. Let it remain 15–30 minutes, then scrub it off with a scrubbing brush and warm water. Sponge with plenty of warm water after scrubbing.

Brick fireplaces that are smoked should be scrubbed with a strong tri-sodium phosphate solution and a scrubbing brush and rinsed thoroughly.

For more stubborn smoke stains use steel wool and scouring powder, or mechanic's hand soap containing sand. Thorough rinsing is essential.

The *fireplace mantel* is cleaned according to the material of which it is made (see index).

Andirons and other metal accessories are cleaned according to type of metal (see index).

The *wood box* should be brushed out each time it is to be refilled. If insect life is discovered in it, prompt action should be taken. Wicker wood boxes are cleaned like wicker furniture (page 194).

Need we say that the fireplace should never be used as a wastebasket or a place to dump the contents of ash trays? When this happens the fireplace is most unsightly when no fire is burning, and a match touched to the litter and debris may create a fire hazard.

Fire screens and other safety measures concerned with the use of a fireplace are discussed on page 88.

Radiators

Exposed radiators must be kept clean for the protection of walls, curtains and draperies. During the season when the heat is on, this special cleaning should be done once a week. In the summer months less frequent cleaning is needed.

If you are not using a vacuum cleaner for cleaning, place dry newspaper under the radiator to protect the floor. Cover this with a layer of dampened newspaper. Brush the coils downward with a radiator brush, so that the dust collects on the damp paper. Fold the paper carefully and dispose of it.

If you have a vacuum cleaner, use the blower attachment to dislodge the dust and blow it downward. Then use the suction attachment to gather the dust into the bag. The dampened paper may be used if desired, but is not really necessary.

Recessed radiators are not a dust problem during the season when they are in use, because air passes through them so rapidly that dust does not collect. In the summer, dust is apt to settle on them, and they should be cleaned every two or three weeks. Most recessed radiators have removable fronts which facilitate cleaning, and many have an arch at the base which admits the vacuum cleaner. The method for cleaning is the same as for exposed radiators.

Hot Air Registers

Once-a-week cleaning should be the rule, during the months when registers are in use, and at least every two weeks during the summer.

Spread dry newspapers on the floor and cover them with a layer of dampened newspapers. Lift the grating from the register and set it on the damp paper. Brush the grating and the opening to the hot air shaft, or use the suction attachment of the vacuum cleaner which does a much more thorough cleaning job.

CHAPTER XVIII

CARE OF METALS

Metals are becoming increasingly easy to care for with the introduction of aluminum, chromium, monel and stainless steel. But many of us love the warm color and soft sheen of copper or brass, and treasure our pewter pieces, old or new. And all of us would like to keep the metals in our home free from disfiguring tarnish, dullness and grime. This is not at all difficult, if we know the quickest and best method for cleaning each kind of metal.

Aluminum

For many years we have appreciated aluminum cooking untensils because they are not only efficient, but because they do not present any special cleaning problem, and because they serve us well for many years if we give them the proper care.

Regular Care

1. Wash aluminum utensils with mild soap and hot water. Fine steel wool or steel wool pads impregnated with special soap speed up the work and leave the utensils gleaming.
2. Never use strong soap, alkalis or alkaline scouring powders, because they darken and discolor aluminum.
3. *Spun aluminum* has a scratch-brushed surface. When steel wool is used for cleaning, rub in the direction of the lines.

Special Care

1. Although aluminum itself will not discolor, certain foods or water that are naturally alkaline may leave a dark film on the surface. This film contains iron and other minerals which are natural components of food and water. The film will not discolor food and is harmless. It can often be removed by boiling a cream of tartar solution (2 teaspoons cream of tartar to each quart of water) in the utensil for a few minutes, or by cooking an acid food such as tomatoes or rhubarb in it. Steel wool or steel wool pads impregnated with a special soap may also be used to remove film. Many research

studies have shown that the food is not harmed in any way by this reaction. A small amount of cream of tartar added to the water in the bottom of a double boiler will prevent discoloration.

2. If food burns on the pan, or sticks badly, soak in hot water until the food loosens, then scrape it off with a wooden spoon to avoid scratching the aluminum. The water may be boiled in the utensil to speed things along.

During the past few years an *aluminum alloy* with a satin-smooth lustrous finish has been used to make trays, candlesticks, compotes, salad bowls, bon-bon dishes, ash trays, desk accessories and many other decorative and useful articles. This metal is easy to care for because it does not stain or tarnish. Mild soap and water remove all traces of soil or fingermarks, and a soft dry cloth restores luster.

Hammered aluminum is also growing in popularity. Soap and water will keep it bright and shining. If tarnishing or staining occurs, use fine steel wool, or steel wool pads impregnated with special soap.

Brass

Decorative brass objects such as vases, trays, andirons, etc., tarnish rapidly and require frequent cleaning and polishing unless they are given a protective coat of clear lacquer.

Procedure for Lacquering Brass

1. Remove all tarnish (below).
2. Wash in hot soapy water.
3. Rinse thoroughly in clear, hot running water. Avoid excessive handling.
4. Dry thoroughly.
5. Apply denatured alcohol (POISON) to the entire surface; let dry.
6. Apply water-white transparent metal lacquer with a paint brush or spray to the entire surface.

When the lacquer finish dulls, remove it with denatured alcohol (POISON) and apply a fresh coat.

Procedure for Polishing Brass

Method 1 (Bright Finish)

1. Apply a good quality metal polish with a soft cloth or cotton waste.

2. Use a soft brush on embossed or carved designs.
3. Let polish dry thoroughly.
4. Rub with a soft cloth or cotton waste to a deep luster.

Method II (*Soft Dull Finish*)

1. Add linseed oil to rottenstone until the mixture is like heavy cream.
2. Apply the mixture with a soft cloth or cotton waste and rub until tarnish disappears.
3. Use a soft brush on embossed or carved designs.
4. Wipe off with cotton waste or soft cloth, dipped in linseed oil.
5. Wipe off excess oil with soft cloth or cotton waste.
6. Rub with flannel polishing cloth.

Method III for Antique Brass (*Warm Antique Finish*)

1. Rub with lemon oil or furniture polish.
2. Remove excess oil or polish with soft dry cloth.

Bronze

Bronze objects are cleaned and polished in the same way as brass.

Chromium

Chromium needs only soap and water to keep it clean. Polishing with a soft dry cloth brings up the luster. Salt, particularly in acids such as lemon juice or vinegar, injures chromium, and salt-containing foods should not be left to dry on this metal.

Copper

Decorative copper articles are cleaned and polished in the same way as brass.

Copper cooking utensils require special care. They must be kept scrupulously clean and free from traces of surface tarnish or verdigris which are unsightly although not actually harmful.

Regular Care

1. After each use wash the utensil in hot soapsuds; rinse thoroughly; dry thoroughly.
2. Watch for signs of corrosion.

Special Care

1. Rub with a section of lemon dipped in salt, or with vinegar and salt to remove stains or corrosion. *Rinse thoroughly.* If a high luster is desired, apply mild scouring powder with a soft damp cloth.

2. Polish when necessary (see Brass, page 209).

3. Copper cooking utensils are lined with chromium or tin. Tin lining wears off and must be renewed periodically, while chromium is attacked by certain foodstuffs and may need renewing after extensive use.

Iron

Wrought iron is made from the purest form of iron and accessories made from it, such as lampstands, resist rust to a greater extent than do articles made of cast iron. However, a protective coat of liquid wax increases this natural resistance and makes work lighter. Do not use liquid wax on fireplace accessories, as it is flammable. Rust stains should be rubbed with kerosene, then scoured with steel wool. If the rust is stubborn, let the kerosene remain on it long enough to soften it. The treatment before storage is the same as for cast-iron cooking utensils.

Cast-iron cooking utensils are splendid for long slow cooking and perfect browning, because heat distribution is even. They are heavy to handle, and require more care than utensils of other materials, but with proper care they will last a lifetime.

Seasoning: Before a cast-iron utensil is used for the first time, it must be seasoned. Wash the utensil and scour it with mild scouring powder until lacquer coating is entirely removed. Wash and dry thoroughly. Apply a liberal coating of salad oil or unsalted fat to the inside of the utensil. Set over very low heat for 2 to 3 hours. Rub fat around utensil every 15 to 20 minutes. Wipe grease out. Wash in hot soapsuds; rinse and dry thoroughly. For several weeks rub unsalted fat on the interior each time the utensil is used, because "seasoning" is a cumulative process and takes time to develop.

Regular Care

1. Wash in hot soapsuds; rinse well. Use baking soda in the last rinse, because alkaline solutions of this sort retard rusting.

2. Be sure utensils are *thoroughly* dry before they are put away or they will rust.

3. If foods stick badly or burn on, soak the utensil in hot water to which a little washing soda has been added. Boil the solution in the utensil if necessary. Wash in hot suds, using a stiff brush and scouring powder if necessary. Rinse and dry thoroughly.

Special Care

1. Rust spots can be removed with scouring powder and monel pot cleaner or steel wool.
2. If utensils are to be stored for a short period, coat them with an unsalted fat or oil to prevent rusting. If they are to be stored for a long time, a thin coating of paraffin is desirable.

Monel

Monel can be kept clean and shining with soap and water alone. Scouring powder may be used, if desired. Rinse off soap or scouring powder, dry, and rub to a sheen with a dry cloth.

Monel acquires a soft patina or sheen and becomes easier to care for with usage, so don't worry if fingermarks show when the metal is new —this condition corrects itself in time.

Nickel

Nickel is used as a plating for iron, steel, copper, etc. If the plating wears off the metal beneath is subject to corrosion.

Regular Care

1. Wash with hot soapsuds; rinse; rub dry.
2. To polish, apply mild scouring powder with a damp cloth or cellulose sponge. Let dry. Polish with a soft dry cloth.

Special Care: If the nickel plating has worn off, and corrosion occurs, remove it with vinegar or lemon juice, and then use metal polish.

Pewter

A soft luster is considered more desirable than a bright, shiny finish for pewter.

Regular Care

1. Wash in hot soapsuds.
2. Rinse thoroughly, being certain that soap is not left in crevices.
3. Dry *thoroughly* to prevent pitting.

Special Care

1. Light tarnish can be removed with silver polish. Never use harsh abrasives or metal polish, which may injure the surface of this soft metal.

2. Severe tarnish should be removed as follows:
   (*a*) Apply silver polish, scrubbing it on well with a soft brush.
   (*b*) While the polish is still wet, apply heavy lather made with mild soap.
   (*c*) Work up a heavy lather of polish and soap all over the utensil, getting into all crevices and depressions.
   (*d*) Rinse in hot water to which a little water softener (page 256) has been added.
   (*e*) Dry thoroughly.
   (*f*) Rub to a soft polish with a flannel polishing cloth or chamois.

Silver

Beautiful silver is meant to be used, not stored away and never enjoyed. Experts tell us that nothing produces a more beautiful luster than constant use. Furthermore, silver that is used all the time needs very little special care. Seldom-used silver should be cleaned and polished thoroughly, and then stored in a tarnish-proof chest or wrapped air-tight in specially treated cloth or treated tissue, so that it will be bright and shining when needed. All tarnish is caused by sulphur sulphide, which is often present in the air and which is found in egg yolks and any food in which egg yolks are used, such as mayonnaise. Unless silver is used and washed each day or stored with special protection, tarnishing is inevitable.

Regular Care

1. Wash in mild soapsuds; rinse thoroughly; dry thoroughly.

2. Unless you are certain that the blades of knives are solid, or soldered into the hollow handle (which is true of modern fine silver) never immerse the handles in hot water, or the cement will be loosened.

3. Separate knives, forks and spoons and wash separately, to avoid scratching.

4. Light tarnish can be removed by rubbing with a jeweller's rouge cloth or treated cloth or paper. If this is done, whenever a slight film of tarnish is noticed, much hard work is saved.

5. Salt will corrode silver very quickly. Open salt dishes and shakers should be emptied after each use and washed. Salt is present in foods: therefore silver which comes in contact with food should be thoroughly washed as soon as possible after use.

Special Care

1. Polishing
   (*a*) Apply silver polish with a soft damp sponge. Rub flatware lengthwise, never with a circular motion.
   (*b*) Use a sponge or soft brush to clean light engraving or chasing, and a stiff brush on highly ornamental pieces unless there are smooth flat areas that a stiff brush might scratch.
   (*c*) Do not use a brush on silverware that has an oxidized* design.
   (*d*) Use a wooden skewer or orange stick with chamois over the point to reach deep crevices.
2. After polishing, wash thoroughly in soapsuds; rinse and dry.
3. Rub to a polish with a soft flannel cloth.
4. *Candlesticks* are a special problem:
   (*a*) Pour warm (not boiling) water into sockets or on wax that has dripped on the base and wipe off with a soft cloth. Or use carbon tetrachloride to remove wax.
   (*b*) Never use a knife or sharp instrument to scrape off wax.
   (*c*) Use a wooden skewer or orange stick to remove wax from crevices after softening with warm water.
   (*d*) Never immerse hollow candlesticks in hot water, because the bases are cemented on.

When large quantities of flatware must be cleaned, the *electrolytic method* is a time saver. It will not harm the finest pieces *unless the silver has an oxidized* or French gray finish. Hollow ware, or flatware with hollow handles, must not be cleaned in this way:*

1. Use a large *aluminum* utensil or enamel kettle with an *aluminum* pie pan or layer-cake pan in the bottom.
2. Add 1 tablespoon baking soda and 1 tablespoon salt to each quart of water in the utensil.
3. Bring solution to boiling point.

*Oxidizing is a process that darkens the background or panelling of a design to provide contrast.

4. Put the silver into the solution, being sure that each piece touches the aluminum or another piece of silver which is in contact with the aluminum. Don't try to do too many pieces at a time.
5. Boil 2–5 minutes, depending on the amount of tarnish.
6. Remove with tongs, wash, rinse and dry.
7. Rub to a soft luster with a clean flannel cloth.
8. To clean the aluminum utensil, see page 208.

Silverlike Alloys

Several new alloys, which are tarnish-resistant, and which resemble silver, have been put on the market. The manufacturer's directions for care should be followed for best results.

Steel

Stainless steel usually requires only soap and water for cleaning. Sometimes, however, a film forms on stainless steel which is not easily removed with soap and water. This film yields to a mild scouring powder applied with a soft damp cloth. Mild scouring powder may also be used to bring out a brighter luster after washing with soap and water. Rubbing with a soft dry cloth brings up the luster. Knives should be washed and dried as soon as possible after using, because certain foods containing salt and acids are apt to pit the metal if left on for an extended period.

Knife blades of regular tempered steel should always be dried thoroughly to avoid rust. If stains appear, scrub them with a cork or paper wad dipped in scouring powder.

Tin

Tin is applied as a plating over iron. All tin utensils must be thoroughly dried before they are put away, to avoid rusting. Heat discolors tin. Don't try to remove this discoloration because blackened tin absorbs heat faster than shiny tin.

Decorative tinware, made in Mexico, is becoming increasingly popular. Articles used out of doors should be coated with clear lacquer. Pieces used indoors may be coated with the hard wax used on automobiles.

Zinc

This metal is no longer in extensive use, but here and there we still find zinc working surfaces which must be kept clean.

Regular Care

1. Wash with hot soapsuds, using a mild scouring powder if necessary.
2. Rinse; dry thoroughly.

Special Care: (To remove tarnish.)

1. Make a solution of 1 part vinegar to 12 parts water.
2. Let the solution stand on the zinc surface a few minutes.
3. Rinse thoroughly; wipe dry.

CHAPTER XIX

DISHWASHING

Very few homemakers can say with complete honesty that they enjoy washing dishes. Any task that must be repeated at such frequent intervals, and which does not produce such tangible results as, say, the polishing of furniture, is bound to lose out in interest value.

The answer, then, is to find new stimulation in seeing how rapidly you can dispatch the work, and still do a thorough job. True efficiency, after all, is doing work well in the shortest possible time, as we have said before.

Is it more efficient to do the dishes after each meal, or only once or twice a day? This is a fine basis for endless argument, because there is no one answer! It depends on the supply of dishes and silverware, on the size of the family, on kitchen space, and on the homemaker's own schedule (page 9). You will, therefore, have to work out your own answer.

One rule holds, however. If dishes are not washed after each meal they must be thoroughly rinsed, so that foods containing certain acids and minerals will not attack them. Silver should be rinsed, then placed in a tall utensil holding soapsuds reaching up to the handles. Pots and pans should be put to soak or they will be difficult to wash later on.

Convenience is certainly of utmost importance to a task that must be done as often as dishwashing. If you have never given any thought to the arrangement of the dishwashing center, it is more than possible that you are wasting time and effort every time you wash dishes.

The location of the sink is important, but unfortunately it cannot be changed conveniently or cheaply in homes already built. Ideally it should be located so that light from a window comes from the side. In this way, no shadows are cast on the work and the worker is not facing the source of light. Dishes must often be washed after dark, and adequate lighting over the sink is essential (page 515).

When a sink is hung too low for comfort it will pay to have it adjusted. The correct height depends on the height of the worker (page 27), but a good average is 39″–40″ from the *rim* of the sink to the floor. If it is impossible to have the sink raised, raise the dishpan by setting it on a wooden rack.

Two drainboards are better than one, so that soiled dishes may be stacked at the worker's right and the dish drainer at her left. This arrangement cuts down waste motion. If the sink is equipped with only one drainboard, a working surface of some sort is needed on the other side. If it is not possible, because of fixed equipment, to arrange a permanent working surface in this location, an inexpensive serving table on wheels which may be stored elsewhere, should be used for stacking soiled dishes and the drainboard should hold the dish drainer.

The following tools and supplies should be stored at the sink, where they are easily accessible:

1. Rubber plate scraper
2. Roll of paper towels
3. Dishpan (optional if sink is equipped with a drain closure)
4. Mild soap (package soaps—flakes, beads, chips or granules are quick to dissolve; bar soaps are economical)
5. Rubber gloves (optional)
6. Cellulose sponge, or brush, or dishcloth or dish mop
7. Mild scouring powder
8. Steel wool or monel pot cleaner
9. Bottle brush
10. Brush for coffee maker
11. Silver polish
12. Rouge cloth
13. Metal polish
14. Dish drainer
15. Dish towels
16. Hand lotion

An adequate supply of hot water is essential for quick and thorough dishwashing (see page 445). Hard water builds up a lime scale which is, of course, undesirable as it detracts from the appearance of fine china and glassware. If your home is in a hard-water district and you do not have a water softening system (page 458) add a small quantity of some good water softening compound (page 256) to the water for washing and rinsing dishes.

Mild soap is the best choice for dishwashing, because it is easy on

Stack washed dishes in the drainer and rinse with hot water. A faucet spray attachment makes easy work of this.

both hands and dishes. Reserve scouring powder and steel wool or similar metal cleaners for use on pots and pans—never subject fine china to such harsh treatment.

Dumping soap in the dishpan is wasteful. Find out how much is needed to produce a lively suds after softening the water if necessary (page 256), and *measure* the soap thereafter.

Dishwashing with Dispatch

A. *Preparation*

1. Put away all food
2. Put cooking utensils to soak
   (*a*) Use cold water in utensils that have held milk, egg or cheese mixtures, or dough
   (*b*) Use hot water in utensils that have held syrup, frosting mixtures, candy, etc.
   (*c*) Use hot soapsuds in greasy utensils

3. Scrape dishes with rubber plate scraper or paper towelling
4. Rinse dishes with hot water
5. Stack dishes according to size and shape, on right-hand drainboard

B. *Washing dishes by hand*

1. Prepare hot soapsuds
2. Wash in any preferred order. The usual order is:
   (*a*) Glassware
   (*b*) Silver
   (*c*) Dishes
   (*d*) Cooking utensils
3. Change the suds frequently. Dirty water won't make the dishes clean.
4. Stack the dishes in the dish drainer as they are washed.
5. Rinse immediately with hot, not scalding, water so that soapy film won't dry on the dishes. A spray attachment for the faucet makes easy work of this.
6. Dry glassware and silver with clean, lintless towels. If dishes are rinsed with hot water they will dry by themselves and can be put away at your convenience.

C. *Washing dishes in an electric dishwasher*

1. Wash pots and pans first (all burned-on food must be removed by hand).
2. Scrape the dishes thoroughly.
3. Follow the manufacturer's directions for loading the trays.
4. Add soap and water softening compound in the exact quantities recommended by manufacturer. Too much lather is a hindrance to thorough cleaning.
5. Fill with water, again following directions.
6. Start the motor.
7. Run the dishwasher for the length of time suggested by the manufacturer.
8. Drain off soapsuds.
9. Refill for hot rinse.

Photographs by William H. Zerbe

Left: The dishwasher should be loaded carefully, according to the manufacturer's directions.

Right: This tray in the dishwasher holds silver in the correct position for thorough cleansing.

10. Drain and rinse a second time.
11. Dry glasses and silver with clean, lintless towels.
12. Let the dishes dry by themselves and put them away at your convenience.

Note: Although a dishwasher may not save many minutes, it does save labor, and manicures, and frees time for other work while the dishes are washing and rinsing. Furthermore, water of a higher temperature can be used, and the dishes are actually cleaner than when washed by hand. Once a week add ½ cup vinegar to the second rinse, to add luster to glass and china and to sweeten the dishwasher.

Special Care of Glassware

1. Rinse glasses which have held milk with cold water, before washing. If they are sticky, rinse with lukewarm water, never hot.
2. Use a rubber pad in the dishpan to prevent chipping.
3. Use a pad of turkish towelling to drain fine glassware.

4. Never subject glass to sudden, extreme changes in temperature, *i.e.,* glasses which have held an iced beverage must not be washed or rinsed with very hot water.
5. If two water tumblers stick together, do not try to force them apart. Fill the inside one with cold water and set the outer one in warm water. They will separate almost at once.
6. A few drops of ammonia in the final rinse water makes glass sparkle. *Do not use for metal-trimmed glass.*
7. Cloudy glass may be caused by scratches or a film of grease or a soap film from hard water. *To prevent:*
   (*a*) Handle carefully to avoid scratching.
   (*b*) Wash and rinse thoroughly.
   (*c*) Soften hard water (page 256).
8. To remove a mineral deposit from the bottom of glass pitchers, shake tea leaves and vinegar in the pitcher until the deposit disappears.
9. Cloudy glass vinegar cruets can be cleaned by allowing a dilute solution of household ammonia to stand in them for a short time.
10. Cut glass requires special care:
    (*a*) Wash each piece separately.
    (*b*) Use a soft brush, mild soap and warm water.
    (*c*) After drying, place on turkish towelling so that excess moisture will be absorbed.
    (*d*) For brilliant luster, dip the outside, while slightly wet, in jeweller's sawdust. When dry, remove the sawdust with a soft cloth or tissue.

For care of silver see pages 213–215.

Special Care of Dishes

A. *Avoid scratching*

1. Set each piece down carefully when stacking; the foot of a dish is not always glazed and may scrape the face of the one on which it is placed.
2. Never stack in high piles.
3. Stack dishes of similar size together.
4. *Lift* a dish from a stack, don't slide it.

5. Never use harsh scouring powders, steel wool or metal cleaners on dishes.

B. *Temperature is important*

1. Never pour boiling water over cold dishes.
2. Use care in warming dishes.
   (*a*) Certain types of earthenware will crack if heated to a temperature of 90°–150° F.
   (*b*) Place a heat-resistant pad under platter if it is set on an uninsulated oven to warm.

C. *Fine china deserves fine care*

1. Use a rubber mat or towel in the bottom of the dishpan.
2. If dishes are stacked, separate them with pads of soft paper or cloth, or better still use rubber-covered racks instead of stacking.
3. Protect stacks of seldom-used china with special dust covers of transparent material.
4. Hang cups from hooks spaced far enough apart so that cups can be put on and taken off easily without hitting cups on either side.
5. Protect the spouts of teapots with crumpled paper, a piece of cardboard, rubber tubing or a hollow cork.
6. Gold- or silver-trimmed china.
   (*a*) Use mild soap (strong soaps, ammonia or washing soda all destroy metal trim).
   (*b*) Use cooler water.
   (*c*) Use soft cloth.
   (*d*) Wash only a few at a time.
   (*e*) Drain on a soft towel or in a rubber-covered dish drainer.
   (*f*) Never stack.

Special Care of Cooking Utensils

1. Always dry thoroughly before putting away.
2. Glass and enamel utensils are given the same care as table glassware (page 221). If food is burned on or stuck to the utensil, soak it in soapy water until the food loosens, then remove it with a rubber plate scraper and wash as usual.
3. Earthenware utensils are treated like dishes (page 222).

4. For the care of aluminum, copper, iron, stainless steel and tin, see pages 208–215.

Special Care of Cutlery

1. Never let cutlery stand in water.
   (*a*) Wash blades first; if stained, use scouring powder.
   (*b*) Wash handles.
   (*c*) Rinse and dry immediately.
2. Cutlery racks prevent nicked blades, bent points and casualties, all of which result when knives are kept loose in a drawer.
3. Don't use knives for prying off covers, etc.
4. Sharpen when necessary. For best results use a sharpening steel or natural oil stone to give your knives a keen edge.
5. *To use a natural oil stone* (8 to 12 inches long):
   (*a*) Hold the knife with its edge against the stone and the back of the blade elevated at a 20° angle.
   (*b*) Draw the blade against the stone from heel to point, raising the back when the point is reached. Let the edge of the blade follow the stone.
   (*c*) Repeat, first on one side, then on the other, until the edge is keen.
   (*d*) Use lighter pressure for the last few strokes.
6. *To use a sharpening steel:*
   (*a*) Hold steel rigid in left hand. Bring the heel of the blade against the end of the steel at a 15° angle.
   (*b*) Draw the blade down the steel toward you so that the point of the blade leaves the steel very near the lower edge of the steel.
   (*c*) Repeat, first on one side then on the other, until the edge is keen (about a dozen strokes).
   (*d*) Another method, which is not as scientific, but which is effective and safe is as follows: hold the knife and steel at the same 15° angle, but begin the stroke at the base of the steel and move the knife upward, ending at the point of the steel).
7. *To use a twin set of metal discs:* Draw the blade through the discs in *one direction only.*

Special Care of Woodenware

Pastry boards, cutting boards, rolling pins, salad bowls and buffet accessories made of wood require special care. The more expensive pieces have a deep protective finish, and stand up well under use if they are properly cared for.

To those who believe that salad bowls should never be washed, we offer this thought: if desirable flavors can be absorbed, so can undesirable flavors! Therefore we advocate washing after each use.

In general, here are the rules that prevent warping and cracking:

1. Clean immediately after use.
2. Never soak.
3. Never immerse in water.
4. Wipe with cold water, scrub with lukewarm water and soap, rinse with cold water. Dry thoroughly. Use very little water.
5. Never stand on edge while drying—this may cause warping.
6. Keep away from heat.
7. Never chill in a refrigerator.
8. Store in a dry place.

Never polish, rewax or apply shellac to woodenware. If a piece roughens, smooth it with No. O sandpaper.

Special Care of Dishcloths and Dish Towels

A. *Dishcloths.* (Whether you use a cloth, a mop or a cellulose sponge.)

1. Wash in hot soapsuds and rinse thoroughly after each use.
2. Hang up to dry.

B. *Dish towels.* (Clean dishes are no longer clean after a soiled towel has been used to dry them.)

1. Stains come out more easily if the dish towels are washed daily.
2. How to wash:
   (*a*) Soak in clean cool soapsuds to loosen stains.
   (*b*) Use chlorine bleach according to directions for severe stains on white cotton or linen towels.
   (*c*) Wash in hot soapsuds.
   (*d*) Rinse at least twice in hot water.
   (*e*) Hang straight to dry—in the sunshine whenever possible.

SECTION TWO

Housecleaning

DAILY CLEANING

No one can be dogmatic about the daily cleaning of various rooms in the house. So many things influence the amount of work that can be done—the quantity of dust or soot in the air, for example, the philosophy of first things first (page 13), the number of rooms that must be cleaned, the size of the family, the age of the children, and the help or lack of it that the homemaker has.

But no matter how much or how little there is to be done, system speeds it along. A large tray for collecting small objects that have wandered into the wrong room—a bag of marbles, the sewing shears or the baby's doll—will save many steps. A wastebasket to receive all the odds and ends that must be thrown away is another time saver.

The cleaning basket (page 142) that holds everything you need for odd and unexpected cleaning jobs saves a trip or two to get this or that from the kitchen.

In this chapter then, we set before you an ideal. How nearly you can approach this ideal, especially as to daily cleaning, we cannot know. But the listing of jobs to be done in each room, in their proper order, will prove a helpful guide and the following outline shows you where to start, and how to proceed with the daily cleaning of the entire house.

Order of Work for Daily Cleaning Routine

1. *Open windows* in bedrooms, top and bottom, on arising, for free circulation of air (except in completely air-conditioned houses).
   Throw back bed covers, including top sheet, on all beds.
2. *Clear away dishes* and misplaced articles from dining room, after breakfast (see steps 1–4 in Dining Room outline for details, page 233).

3. *Rinse and stack dishes, pots and pans* in kitchen.

   Put away food.

4. *Put living room in order* (see steps 1–4 in Living Room outline for details, page 230).

5. *Give all rooms regular daily cleaning,* in following order:
   (*a*) Living Room (see Living Room outline for details, page 230).
   (*b*) Second Living Room (sun porch, den, library, etc.).
   (See Living Room outline for details, page 230).
   (*c*) Dining Room (see Dining Room outline for details, page 233).
   (*d*) Bedrooms (Baby's Room, Nursery, etc.).
   (See Bedroom and Baby's Room outlines for details, pages 235–243).
   (*e*) Bathrooms (see Bathroom outline for details, page 243).
   (*f*) Upstairs Hall, if any (see Living Room outline for details, page 230).
   (*g*) Stairs, if any (see page 247).
   (*h*) Downstairs Hall (same as Upstairs Hall).
   (*i*) Kitchen (see Kitchen outline for details, page 247).
   (Before cleaning kitchen, put away all cleaning equipment except that needed for kitchen, and carry out any necessary food preparation for luncheon or dinner.)

WEEKLY CLEANING

Although some experts consider it best to give one room its weekly cleaning each day, it seems to us that another plan is really more efficient, because it leaves three days besides Sunday free of extra cleaning.

We suggest that on a convenient day, possibly Thursday, you give the bedrooms and bathrooms their weekly cleaning, following the order-of-work outlines on pages 235–247. You may find that you save time by doing each job, such as dusting, in all the bedrooms, one after another, or you may prefer to clean each room as a unit and then carry the cleaning equipment into another room.

On another day, possibly Friday, follow this same plan for the living rooms and dining room.

The day *before* you do the bulk of your weekly food marketing is a good day to give the kitchen its weekly cleaning.

Don't set yourself a standard that is beyond your strength. Don't

sacrifice necessary recreation to the god of absolute cleanliness. Don't neglect precious family relationships for the pleasure of a spotless house. Nothing dire will happen if certain less-used rooms have to be given a "lick and a promise" occasionally!

Remember, the easiest and quickest way to do a job well is the most efficient way. Organize your time and make every minute count while you are working. Then relax and enjoy life in the leisure hours that are rightfully yours because you have earned them.

SEASONAL HOUSECLEANING

Do you prefer to stretch housecleaning over the year, including certain seasonal work as it comes along, or does it give you intense inner satisfaction to attack the house once or twice a year and clean it inside and out from top to bottom? And which of these two ways is better?

This is a delicate problem, and it needs a psychologist who is also a diplomat to solve it. We have our own opinion, but we shall attempt to keep it discreetly veiled while the discussion is under way.

There is just one plank on which we stand firm. It is *not* fair to your family to tear the whole house apart all at once and leave it that way for several days while you dash from attic to basement, like one of the seven furies. One or two rooms should be left inviolate for the family's peace and comfort.

If you belong to the group which dislikes cleaning orgies, you will find that by following the order-of-work outlines for weekly care of specific rooms (pages 230–253), each room will receive a thorough cleaning as a matter of routine. The changing of the seasons won't upset your routine drastically, and you can take the strictly seasonal jobs (see outline, page 229) as they come.

If you belong to the other group, there are two ways to attack the big job you have set yourself, neither of which will drive your family out of the house. One rule applies to both: set aside at least two weeks and stretch the work over this period. Make out a schedule according to the plan you select, and write down just what is to be done each day.

Plan 1. Take one room at a time and treat it as a unit, cleaning the room itself and everything in it. Restore order after cleaning.

Plan 2. Do similar jobs at the same time, cleaning walls and ceilings in two or three rooms in one session.

If you are going to have a handy man or cleaning woman to help

you it is wise to schedule the work to be done, so that paid for time will not be wasted.

Let a handy man do the heavy cleaning. If you are cleaning the bedrooms, for example, he can carry out mattresses, bedding and small rugs for airing. He can take down storm windows, wash windows, put up screens and awnings or the reverse, according to season. You can delegate the cleaning of ceilings, walls and floors to him, with careful instructions and supervision, of course.

If you employ a cleaning woman, you may wish to work with her on one room until that is entirely finished. On the other hand, you may prefer to turn over to her the work that is beyond your strength, or work that you particularly dislike. This leaves you free to go ahead with other tasks.

In any event, the crux of the matter is that a plan is necessary—a plan which includes your work as well as the work you turn over to some one else.

Perhaps, if you are wise, your family will not even realize that housecleaning is under way.

Order of Work for Special Seasonal Jobs

1. *Closets and Bureau Drawers*

   Review contents; sort into separate piles:

   Articles to be cleaned or renovated.
   Articles to be returned to active use.
   Articles to be stored away for the season.

   Clean closets and drawers; restore order.

   Pack away articles not to be used during season (page 368).

2. *Home Furnishings* (blankets, draperies, rugs, slip covers, furniture, etc.).

   Collect articles needing cleaning or renovation.

   Send out articles requiring professional care.

   Attend to laundering or renovation that can be done at home.

3. *Basement*

   Remove all trash.

   Clean ceiling (page 166), walls (pages 157–166) and floor (page 155).

   Refinish walls (page 574) if necessary.

   Game Room (if any): See Living Room outline, page 230.

4. *Attic*

Attend to any necessary cleaning and reorganization.
Dispose of trash.

5. *General Housecleaning.*

6. *Storm Windows, Screens and Awnings*

Spring: Take down storm windows and storm doors; wash and store.
Brush screens and put up.

Summer: Brush awnings and put up.

Fall: Take down awnings; brush and store.
Take down screens; wash (page 172) and store.

Winter: Wash storm windows and put up.
Put up storm doors.

THE LIVING ROOM

The living room belongs to the whole family. To each person it is a place for quiet recreation, relaxation, study or rest. Surely those who enjoy the living room should share the responsibility for seeing to it that clutter and confusion do not mar its restful air of hospitality.

This does not mean that the room should not have the charm of livability. It does mean that each person should be thoughtful enough to put away school books and papers, playing cards, sewing or the stamp collection, as the case may be, when work or play is over. If every one helps by picking up newspapers, returning magazines to table or rack, and emptying ash trays just before bedtime each evening, the homemaker will have just that much less to do during the busy hours of the next morning. And the living room will present a serene face to the earliest caller.

Order of Work for Cleaning Living Room

Daily Care

1. Open windows top and bottom for free circulation of air.
2. Pick up and replace small articles belonging in the room, such as books, magazines, music, games, victrola records, cards, etc.
3. Gather up on tray to take out: used ash trays, articles belonging in other rooms, plants or flowers to be tended. Collect trash in waste basket.

4. Carry out tray.
5. Bring in cleaning equipment: hearthbroom (if not kept at fireplace), carpet sweeper or vacuum cleaner (according to need), dust mop, cleaning basket (page 142).
6. In season, clean out fireplace, lay fire, sweep hearth.
7. Dust high objects if necessary: mantels, high shelves, window frames and sills, tops of bookcases, secretary, highboys, etc.
8. Dust radiator covers if necessary.
9. Brush upholstery if necessary. Straighten covers. Plump up pillows.
10. Dust furniture and low objects if necessary. Treat stains or blemishes as they occur (page 187).
11. Dust exposed wood flooring with dust mop if necessary. Use carpet sweeper or vacuum cleaner on rugs or carpets.
12. Final touches: Straighten draperies, shades, curtains, etc. Take out cleaning equipment and waste basket. Return clean ash trays, accessories, flowers and waste basket. Close windows if desired.

Weekly Care

One day each week additional care should be given the living room.

1. Clear surfaces for dusting, removing magazines, covers, bric-a-brac, etc.
2. Collect lamp bases and globes, bric-a-brac, fireplace fittings, etc., that need washing or polishing.
3. Bring in cleaning equipment: hearthbroom (if not kept at fireplace), vacuum cleaner and attachments, dust mop, cleaning basket (page 142), 2 bowls of clear warm water on tray. (At least two trips will be necessary.)
4. Brush ceilings (page 166) and walls (page 157) when necessary. Dust high mouldings, door and window frames, window shades and Venetian blinds (page 171) when necessary.

   Brush draperies (or use brush attachment of vacuum cleaner). Dust mirrors, pictures, lighting fixtures, lamps, woodwork; wash any of these articles if necessary (see index for page references).
5. Dust radiators (covers and coils) or registers (page 207); clean thoroughly when necessary.

Brush baseboard or use brush attachment of vacuum cleaner. Dust book shelves and books as necessary (page 202).

Wash windows when necessary.

6. Remove cushions from upholstered furniture. Use brush attachment of vacuum cleaner on furniture (getting into all crevices) and cushions. Replace cushions.
7. Dust furniture; rub wood surfaces to polish (page 187); apply wax or polish when necessary. For special care of furniture, see index for types.

   Polish metal hardware if necessary.

   Wash glass table tops.
8. For weekly or special care of each type of flooring, see index for types.

   Use vacuum cleaner for thorough cleaning of rugs and carpets (page 131).
9. Polish or wash accessories and return to place with other objects removed during cleaning.

Special Seasonal Jobs

At least once or twice a year special care should be given the living room.

1. Collect draperies, curtains, slip covers, etc., to be laundered or dry cleaned, so that they will be ready to be put back by the time the room has been thoroughly cleaned.
2. Clean hearth and fireplace thoroughly (see index for various types).
3. For special cleaning or washing of walls, see pages 157–166.
4. Wash or otherwise thoroughly clean window shades, Venetian blinds, etc. (page 171). For special care of picture frames, see page 196. For special care of books, see page 202.
5. Special care of upholstered furniture; shampooing (page 190); dry cleaning (page 192); mothproofing (pages 370–374); storing (page 375).
6. Special care of wood furniture; repairing or renovating (page 537).
7. Special care of rugs; shampooing (page 176); washing (page 304); mothproofing (page 379); storing (page 379); turning (page 177).
8. Clean lampshades (page 198).
9. Hang clean curtains and draperies. Adjust clean slip covers. Lay clean rug.

THE DINING ROOM

This room seldom gets seriously out of order. The most important detail is the use of the carpet sweeper after each meal so that crumbs will not work into the rug and soil it. Of course the room where meals are served should be kept free of dust, and fresh and clean at all times.

Order of Work for Cleaning Dining Room

Daily Care

1. Open windows top and bottom for free circulation of air.
2. Clear breakfast dishes from table to tray or tea wagon.
   Pick up and replace small articles belonging in the room.
3. Gather up to take out: articles belonging in other rooms, plants or flowers to be tended; place on tray or tea wagon.
   Collect trash in waste basket.
4. Carry out tray or tea wagon.
5. Bring in cleaning equipment: carpet sweeper or vacuum cleaner (according to need), dust mop, cleaning basket (page 142).
6. If there is a fireplace, lay fire and sweep hearth, in season.
7. Dust high objects if necessary (mantels, window frames and sills, top of china cabinet, high shelves, etc.).
8. Dust radiator covers if necessary.
9. Brush upholstery, if any.
10. Dust furniture and low objects if necessary. Treat stains or blemishes as they occur.
11. Dust exposed wood flooring with dust mop if necessary.
    Use carpet sweeper or vacuum cleaner on rugs or carpets.
12. Final touches: Straighten draperies, shades or curtains, etc.
    Take out cleaning equipment and waste basket, etc.
    Replace plants, flowers, waste basket, etc.
    Close windows if desired.

Weekly Care

One day each week additional care should be given the dining room.

1. Clear surfaces for dusting, removing buffet appointments, bric-a-brac, etc.

2. Collect silver and other metal accessories to be polished.
3. Bring in cleaning equipment: vacuum cleaner and attachments, dust mop, cleaning basket (page 142), 2 bowls of clear warm water on tray. (At least two trips will be necessary.)
4. Brush ceilings (page 166) and walls (page 157) when necessary.
   Dust high mouldings, door and window frames, window shades and Venetian blinds (page 171) when necessary.
   Brush draperies (or use brush attachment of vacuum cleaner).
   Dust mirrors, pictures, lighting fixtures, lamps, and woodwork; wash any of these articles when necessary (see index for page references).
5. Dust radiators (covers and coils) or registers (page 207); clean thoroughly when necessary.
   Brush baseboard or use brush attachment of vacuum cleaner. Dust book shelves and books as necessary (page 202).
   Wash windows when necessary.
6. Use brush attachment of vacuum cleaner on upholstered chair seats.
7. Dust furniture; rub wood surfaces to polish (page 187); apply wax or polish when necessary. For special care of furniture, see index for types.
   Polish metal hardware if necessary.
   Wash glass table tops.
8. For weekly or special care of flooring, see index for types. Use vacuum cleaner for thorough cleaning of rugs and carpets (page 131).
9. Polish silver and other metal accessories and return to place.
10. Replace buffet appointments, bric-a-brac, etc.

Special Seasonal Jobs

At least once or twice a year special care should be given the dining room.

1. Collect draperies, curtains, slip covers, etc., to be laundered or dry cleaned so that they will be ready to be put back by the time the room has been cleaned.
2. For special cleaning or washing of walls, see pages 157–166.

3. Wash or otherwise thoroughly clean window shades, Venetian blinds, etc. (page 171). For special care of picture frames, see page 196.
4. Special care of upholstered furniture; shampooing (page 190); dry cleaning (page 192); mothproofing (pages 370–374); storing (page 375).
5. Special care of wood furniture; repairing or renovating (page 537).
6. Special care of rugs; shampooing (page 176); washing (page 304); mothproofing (page 379); storing (page 379); turning (page 177).
7. Clean lampshades (page 198).
8. Hang clean curtains and draperies. Adjust clean slip covers. Lay clean rug.

THE BEDROOM

The rooms where we sleep should be kept immaculately clean, sweet and fresh at all times.

Here again, a well-trained family can help with the care. If each one carries soiled clothing to the hamper or clothes-chute, hangs up other clothing, puts away personal possessions, turns back the bedding and opens the windows before breakfast, the sum total of saved time really amounts to something for the homemaker or servant.

Beds and bedding need regular special care.

Bed Frames

Clean thoroughly at least four times a year:

1. Remove bedding, mattress and springs.
2. Dust bed frame thoroughly with the dusting attachment of the vacuum cleaner.
3. Clean the frame:
   (*a*) Enamelled or painted—wash (page 194).
   (*b*) Varnished—wipe with damp cloth; dry thoroughly.
   (*c*) Waxed or polished—rub to a gloss with a flannel polishing cloth (page 187) or apply wax or polish (page 185).

Springs

Coil or link springs—wipe with a cloth and a few drops of lemon oil.

Box springs—clean on all sides with the brush attachment of the vacuum cleaner.

Mattresses

Innerspring:

1. Protect with a mattress cover (a pre-shrunk, zipper-fastened cover is easy to remove, launder and replace).
2. Use a mattress pad between mattress and sheet.
3. Turn the mattress top to bottom one week, and end to end the next week.
4. Clean the mattress on both sides with the brush attachment of the vacuum cleaner every six to eight weeks.
5. Sun and air once a week (strip off the bedding and open the windows wide for at least an hour).
6. Never bend, roll, beat or stand on end.

Pad Mattresses (felted cotton, kapok, hair):

1.–5. as for innerspring mattresses, above.

6. Bending, rolling or standing on end are not recommended, but do not damage this type of mattress as severely as they do an innerspring mattress. An occasional beating does no harm, but usually is not necessary.
7. Kapok mattresses need frequent sunning to prevent deterioration.

Two-layer:

1. Use a mattress pad between mattress and sheet.
2. Turn top section only.
3. Fluff up top section by shaking occasionally.
4. Same as innerspring, above.
5. Same as innerspring, above.
6. The top layer can be rolled without damaging.

Latex-foam (rubber):

1. A washable cover may be purchased if desired. A permanently attached cover is cleaned with the brush attachment of the vacuum cleaner.
2. Use a mattress pad between mattress and sheet.
3. Turning is unnecessary.
4. The mattress itself may be cleaned occasionally with the dusting

attachment of the vacuum cleaner, if desired, although the "breathing" action of the mattress prevents any accumulation of dust.

5. Same as innerspring (page 236).
6. Rolling does not injure this type of mattress.

Renovation of Mattresses

In all but twelve states, laws have been enacted to govern the renovation of bedding. Some state laws are better than others, and some states enforce them more rigidly than others.

If you plan to have a mattress renovated, it would be wise to write to your State Department of Health or Labor, and ask whether a permit or license is required of laundries and other concerns who renovate bedding. Ask, too, for a statement of the section of the bedding laws which deals with renovation.

If you find that a license or permit is required, be sure that the concern you patronize has such a license.

Mattresses should be renovated after ten or twelve years of use, or sooner if necessary.

Hair mattresses: Sterilization of hair; additional hair and new ticking, when necessary. Hair mattresses may be converted into innerspring mattresses if desired, the hair being used between the spring and the ticking. This often costs nearly as much as a new innerspring mattress of good quality.

Cotton or Kapok mattresses: Sterilization of filling; additional or completely new filling and new ticking when necessary.

Innerspring mattresses: Sterilization of filling; new ticking, filling, retufting, spring units, as necessary.

Pillows

Air pillows at least once a month by placing them on chairs near an open window.

Renovation of Pillows

Commercial laundries and other concerns often offer a renovating service (see above for a discussion of state laws regulating this work).

In a real renovation job the feathers or down are removed from the ticking, washed or steamed, sterilized with air or steam at high

temperature and fluffed for springiness. The ticking is washed separately. A careful marking system assures you that the feathers from each pillow are treated separately and returned to the original ticking.

Occasionally it is necessary to add new feathers or down. Be sure to specify the kind you wish to have added.

Laundries also offer a washing service for pillows which is quite different from renovation. The ticking is not removed, and there is no fluffing or relivening of feathers.

When Does a Pillow Need Renovating?

Many women who are otherwise excellent housekeepers treat their pillows to astonishing neglect! Concealed beneath a spic-and-span pillowcase are, all too often, crushed and lifeless feathers, and an alarming amount of actual dirt, soil and dust.

Pillows should be washed or renovated every five to seven years. Renovating is really better, because it is so much more thorough. Washing pillows at home is difficult, and never as satisfactory as professional care.

These tests will tell you whether your pillows need renovating:

1. Shake and plump up a pillow. Hold it out on the palm of your hand. If it remains full and plump it is in good condition, but if it collapses and sags at either end, it needs to be renovated.
2. Lay the pillow flat and press down the center with your hand. If it rebounds there is still life in it. If the depression remains, it needs renovation.
3. Shake the pillow vigorously from one end. If the feather filling settles noticeably at the other end it shows that the feathers have lost their resiliency, and that perhaps there are broken feathers and dust that weigh it down.
4. Pound the pillow hard. If dust flies or if you feel stiff ragged quills through the ticking, the pillow needs renovation.

Bedding

Bedding should be aired at least once a week. Spread it over two chairs near an open window and leave it there for at least an hour. An occasional airing out of doors over a line is good for it. Choose a day when the weather is fair and warm.

Laundering directions for blankets are given on page 298, for quilts on page 300, and for mattress pads on page 297.

"Puffs" or comfortables should never be left at the foot of the

bed during the day, where their perishable coverings are exposed to light, sun and dust. In the first place, it is not considered good taste to display them in this way, and in the second place you are keeping them on duty twenty-four hours a day and shortening their life by half. They should be covered or put away in boxes when not in use. Or leave them on the beds, under the bedspreads, but don't tuck them in.

How to Make a Bed

1. Spread mattress pad smooth.

2. Spread bottom sheet *right side up,* even and straight, with center crease exactly in center of bed and wide hem at top.

3. Tuck sheet in at head and foot of bed.

4. Make "hospital"* or mitered corners on all four corners. Be sure sheet is smooth.

5. Spread top sheet *right side down,* even and straight, with wide hem at top.

6. Tuck sheet in at foot. Make mitered corners at foot only.

7. Spread blankets on, one at a time. Tuck in at foot, mitering corners. Tuck in at sides and turn top sheet down over blankets.

8. If desired, spread third sheet or blanket cover over blankets, mitering corners and tucking in sides.

9. Plump up pillows and place at head of bed.

10. Adjust bedspread. If the spread is not fitted it will hang better if mitered corners are made at the foot.

Order of Work for Cleaning Bedrooms

Daily Care

1. Open windows top and bottom for free circulation of air. (This should be done before breakfast by the person occupying the room.)
2. Throw back bedcovers, including top sheet. (This too should be done before breakfast by the person occupying the room.)
3. Pick up and replace small articles belonging in the room, such as books, bedroom slippers, etc.

*To make "hospital" or mitered corners:
1. Pick up edge of sheet about 15 inches from foot of bed. Lift up into diagonal fold; lay fold on mattress.
2. Tuck the part of the sheet that is left hanging, under the mattress.
3. Drop the fold, pull smooth; tuck under mattress.

4. Gather up to take out: articles belonging in other rooms, soiled clothing. Collect trash in waste basket.
5. Carry out articles belonging elsewhere.
6. Bring in cleaning equipment: carpet sweeper or vacuum cleaner (according to need), dust mop, dust cloth, damp cloth.
7. Make bed (page 239).
8. Dust high objects if necessary (mantels, high shelves, window frames and sills, tops of bookcases, etc.).
9. Dust radiator covers if necessary.
10. Brush upholstery if necessary. Straighten covers. Plump up pillows.
11. Dust furniture and low objects if necessary. Treat stains or blemishes as they occur (page 187).
12. Dust exposed wood flooring with dust mop if necessary.
    Use carpet sweeper or vacuum cleaner on rugs or carpets.
13. Final touches: Straighten draperies, shades, curtains, etc.
    Take out cleaning equipment and waste basket.
    Bring back clean ash trays, accessories, flowers and waste basket.
    Close windows if desired.

Weekly Care

One day each week additional care should be given the bedrooms.

1. Remove all bed covers; stretch over end of bed, or over chairs, off the floor. Remove soiled bed linen; place near door to be taken out. Place mattress pad over chair near window to air.
2. Collect lamp bases, bric-a-brac and dressing table fittings that need polishing or washing, and dresser scarves to be laundered.
3. Bring in cleaning equipment: vacuum cleaner and attachments, dust mop, cleaning basket (page 142). Bring in fresh bed linen.
4. Turn mattress end for end, and over if desired. (For special care of various types of mattresses, see page 236). Make bed.
5. Brush ceilings (page 166) and walls (page 157) when necessary. Dust high mouldings, door and window frames, window shades and Venetian blinds (page 171) when necessary.
   Brush draperies (or use brush attachment of vacuum cleaner). Dust mirrors, pictures, lighting fixtures, lamps, woodwork; wash any of these articles if necessary (see index for page references).

6. Dust radiators (covers and coils) or registers (page 207); clean thoroughly when necessary.

   Brush baseboard or use brush attachment of vacuum cleaner. Dust book shelves and books as necessary (page 202).

   Wash windows when necessary.

7. Remove cushions from upholstered furniture. Use brush attachment of vacuum cleaner on furniture (getting into all crevices) and cushions. Replace cushions.

8. Dust furniture. Rub wood surfaces of furniture to polish (page 187); apply wax or polish (page 185) when necessary. For special care of furniture, see index for types.

   Polish metal hardware if necessary (page 208).

   Wash glass table tops.

9. For weekly or special care of each type of flooring, see index for types.

   Use vacuum cleaner for cleaning of rugs and carpets (page 131).

10. Polish or wash accessories and return to place with other objects removed during cleaning.

Special Seasonal Jobs

At least once or twice a year special care should be given bedrooms.

1. Collect blankets, quilts, dressing table skirts, curtains, draperies and slip covers to be laundered or dry cleaned, so that they will be ready to be put back by the time the room has been cleaned.

2. For special cleaning or washing of walls see pages 157–166.

3. Wash or otherwise thoroughly clean window shades, Venetian blinds, etc. (page 171). For special care of picture frames, see page 196.

4. Special care of upholstered furniture; shampooing (page 190); dry cleaning (page 192); mothproofing (pages 370–374); storing (page 375).

5. Special care of wood furniture; repairing or renovating (page 537).

6. Special care of rugs; shampooing (page 176); washing (page 304); mothproofing (page 379); storing (page 379); turning (page 175).

7. Clean mattress with vacuum cleaner (page 236); sun and air if possible. Clean bedspring thoroughly (page 235). Remove spring and clean bed frame with brush attachment of vacuum cleaner. Polish

bed frame (page 185). Send mattress to be renovated or sterilized if necessary.

8. Clean lampshades (page 198).
9. Hang clean curtains and draperies. Adjust clean slip covers, dressing table skirts. Lay clean rug.

Order of Work for Cleaning Baby's Room

Daily Care

1. Clean room while baby is out.
2. Open windows top and bottom.
3. Pick up and replace small articles belonging in room: toys, etc.
4. Gather up to take out, soiled clothing, soiled bedding, articles belonging in other rooms.
5. Carry out articles collected in 4 above.
6. Bring in cleaning equipment: carpet sweeper or vacuum cleaner according to need; dust mop; 2 clean dust cloths, 1 damp, 1 dry; 2 bowls warm water on tray.
7. Dust high objects: mantels, high shelves, window frames and sills, door frames, tops of chests, etc.
8. Dust radiator covers if necessary.
9. Dust furniture and low objects if necessary. Treat stains or blemishes as they occur (page 187).
10. Dust exposed wood flooring with dust mop if necessary. Use carpet sweeper or vacuum cleaner on rugs.
11. Make bed (page 239).
12. Final touches. Straighten shades and curtains. Put away clean clothing. Return waste basket. Adjust ventilation.

Weekly Care

One day each week additional care should be given the baby's room.

1. Clean room while baby is out.
2. Open windows top and bottom.
3. Pick up and replace small articles belonging in room: toys, etc.
4. Gather up to take out: soiled clothing, soiled bedding, articles belonging in other rooms. Collect lamp bases and other articles to be washed or polished.

5. Carry out articles collected in 4 above.
6. Bring in cleaning equipment: vacuum cleaner and attachments; dust mop; 2 clean dust cloths, 1 damp, 1 dry; 2 bowls warm water on tray.
7. Dust high objects: mantels, high shelves, window frames and sills, door frames, tops of chests, etc. Brush or shake curtains. Dust mirrors, pictures, high mouldings, lighting fixtures. Dust window shades.
8. Dust radiators (covers and coils) (page 207). Brush baseboard or use brush attachment of vacuum cleaner. Dust bookshelves and books as necessary (page 202).
9. Dust furniture, lamp bulbs, globes and shades. Rub wood surfaces or furniture to polish (page 187). Treat all stains or blemishes (page 187). Polish metal hardware if necessary.
10. Thorough cleaning of floor, wash if necessary (see index for types). Use vacuum cleaner for thorough cleaning of rug.
11. Make bed with clean sheets and pillow cases (page 239).
12. Final touches. Straighten shades and curtains. Put away clean clothing. Return waste basket. Adjust ventilation.

THE BATHROOM

Cleanliness is all-important in the bathroom. Each member of the family should share in the responsibility of keeping the bathroom in spotless condition—no soapy splotches left on the washbowl, no "bathtub ring," no careless flinging about of towel or washcloth to tell the tale of poor training or carelessness.

A can of fine scouring powder, a container of water softener (page 256), a bathtub brush and a special cleaning cloth or cellulose sponge kept at hand in the bathroom will encourage family cooperation. Towels of different hue for each person using the bathroom are subtle reminders that order is the bathroom's first law.

Good ventilation is essential, so that shower curtains, washcloths and damp towels may dry out quickly.

Cleaning the Bathtub and Washbowl

Modern fixtures with their satin-smooth surfaces are extremely easy to clean. We like to use a dampened cellulose sponge and mild scouring powder, but a soft brush or soft porous cloth may be used with the

powder instead. A long-handled brush saves stooping when cleaning the tub. Rinse fixtures thoroughly after using scouring powder.

Soap scum deposit (*bathtub ring*) is removed more easily if a good water-softening agent (page 256) is used in addition to the scouring powder. Kerosene dissolves soap scum and will not injure fixtures, but the odor is objectionable to many persons. If you use it, apply it with paper towelling and then wash the surface clean with soapy water.

Iron rust stains on fixtures are disfiguring (see page 466 for preventive measures). Sometimes rubbing with a cut lemon will remove them. A weak (5 per cent) solution of oxalic acid (POISON), applied with paper towelling and rinsed off thoroughly after a few seconds will remove more stubborn stains. If the acid is left on the surface too long, the finish will be weakened or even removed.

Cleaning the Toilet Bowl

Daily care is essential. Use a long-handled brush especially designed for this work, and scrub the bowl with fine scouring powder. Or use long metal tongs holding a wad of soft paper or cloth. Clean the rim of the bowl and the seat with powder, using a special cleaning cloth of distinctive color, kept for this purpose alone. Always wash this cloth and the toilet bowl brush in hot suds and rinse thoroughly after each use. Scald occasionally. Hang in the sun to dry, if possible.

Clean the outside of the toilet bowl with sponge or cloth and mild scouring powder.

Twice a week use a special toilet bowl cleaner according to directions on the can. Flush thoroughly after its use and clean down the sides of the bowl with the toilet brush.

Cleaning Metal Fixtures (faucets, towel bars, etc.)

Chromium: Wash with a cloth or sponge wrung out of soapy water. Polish dry with a clean cloth.

Nickel: Wash with soapy water. Apply fine scouring powder or metal polish. Let dry. Polish with a soft cloth. Corrosion may be removed with vinegar or lemon juice.

Care of Drain Traps

After each use of tub or bowl, flush the trap with clean hot water. This carries off grease and leaves the trap full of clean water. Dirty water left in traps gives off an unpleasant odor.

Clogged waste pipes are a nuisance. Lint and hair are the usual culprits. Be careful never to throw anything down the drain that will tend to clog it, such as grease, hair, cloth, etc. Pour boiling water down the drain to cut any grease that may be present. Remove visible lint or hair with a long wire. If all this fails to remove the obstruction, see page 464 for further measures.

Care of Shower Stalls

The base of the stall should be thoroughly cleaned, with special attention to any crevices which may collect dust or soap lather. This is especially important in hot humid weather.

The care of the floor depends on the material of which it is made (see index for types). Never use soap on a tile floor; it leaves a slippery film which is dangerous.

Unsightly cracks where the tub or shower joins the wall occur frequently. In the interest of sanitation and beauty these cracks should be filled with a material especially adapted for this purpose, or covered with metal mouldings.

Care of Shower Curtains

Leave the curtains fully stretched out to dry after each use. This is important all the year round but especially in summer when mildew is apt to ruin fabrics if precautions are not taken.

Shower curtains are made from a variety of fabrics, each of which needs special care. Look for a tag with instructions as to care.

Oiled silk: Sponge off after each use and spread out to dry. This is a coated fabric and any soil that clings to it is surface soil only. Work on a flat surface and do not crumple the fabric. Wipe with a damp cloth or sponge. Mild soap suds may be used on especially soiled spots. Rinse off with clear lukewarm water, sparingly applied. Hang on shower curtain hooks to dry.

If the fabric has been creased or wrinkled, cover it with a pressing cloth and use a warm, *not hot,* iron for pressing.

Duck: Sponge off soap with clear water after each use. This heavy cotton fabric launders and wears well, although it may not be particularly beautiful. Duck shower curtains should be spread out to dry after use, especially in humid weather, to avoid mildew damage.

Water-repellent silk, rayon or novelty weave cotton: Sponge off soap with clear water after each use, and spread out to dry. Shower curtains

treated in this way may be washed in mild lukewarm suds, rinsed in clear lukewarm water, and pressed with a warm, *not hot,* iron while still damp. Do not squeeze, rub or wring.

Pliofilm: Same care as oiled silk. Do not iron.

Pyroxolin-coated silk and rayon: Same care as oiled silk. Do not iron.

Plain or fleece-napped rubber: Same care as oiled silk. Do not iron.

Care of Hampers

A hamper for soiled clothes is often kept in the bathroom, but wherever it is kept it should be washed thoroughly several times a year. Use mild soap and water and a soft brush if necessary. Rinse thoroughly. Dry. Leave in the sun for several hours if possible.

Order of Work for Cleaning Bathroom

Daily Care

1. Open windows top and bottom for free circulation of air.
2. Pick up and replace small articles belonging in bathroom.
3. Gather up to take out soiled linen (to hamper, if dry), and articles belonging in other rooms. Collect trash in waste basket. Roll up bath mat or rug.
4. Wipe mirror.
5. Wipe tile behind washbowl and tub.
6. Clean bathtub and metal fixtures (be sure to wipe shower fixture, and clean soap holder).
7. Clean toilet bowl with brush. Wipe outside of bowl and closet with cloth used for that purpose *only.*
8. Clean washbowl (be sure to wipe base as well as top; also clean soap holder).
9. Straighten towels and wash cloths. Put out clean linen when needed (fresh linen for all on Wednesdays and Saturdays).
10. Sweep floor. Gather up dust in pan.
11. Replace bath mat or rug. Close windows in cold or damp weather.

Weekly Care

One day each week additional care should be given the bathroom.

1. *Rug* should be cleaned and *bathmat* changed.

2. *Duck shower curtain* should be hung out in the sun if weather permits. (Clean curtain should be put up when needed.)
3. *Walls* should be wiped down with clean cloth or wall brush, washed when necessary.
4. *Light fixtures, bulbs and globes* should be dusted every week, washed when necessary.
5. *Medicine cabinet* (page 104) should be dusted and straightened, washed when necessary.
6. *Mirror* should be dusted, washed when necessary.
7. *Windows* should be dusted inside, washed on both sides when necessary.
8. *Curtains* should be laundered when necessary.
9. *Toilet bowl* should have special cleanser used each week.
10. *Clothes hamper* should be emptied, dried and aired each week, scrubbed and sunned occasionally when weather permits.
11. *Floor* should be washed twice weekly, Tuesdays and Fridays, oftener if needed.

HALLS AND STAIRS

You will find that you can follow the Living Room outline for cleaning halls, because the problems are so similar.

Stairs present problems peculiar to themselves, from the standpoint of safety (page 95) and cleaning.

Uncarpeted stairways may be dusted every day, or as often as necessary with a treated dustcloth (page 136), a short-handled mop or the dusting tool of the vacuum cleaner. Don't neglect the bannisters as you dust. Varnished stairs need an occasional rubbing treatment with rottenstone and lemon oil (page 188) to protect the surface and preserve its beauty.

Stair carpeting should be brushed several times a week with a whisk broom or upholstery brush. At least once a week it should be cleaned with the brush attachment of the vacuum cleaner.

THE KITCHEN

High standards of cleanliness should always be maintained in the room where food is stored and prepared. Order ranks next to cleanliness in importance, for nowhere is it more essential to have a place

for everything and everything in its place than in the kitchen. Food preparation, dishwashing—all the many kitchen tasks—are sped along if there is no searching or groping for tools and utensils (page 16).

All the large equipment in the kitchen needs special care. The beauty of a modern refrigerator, range or sink is easily maintained with a few minutes attention each day.

Refrigerators

I. *Automatic Refrigerators*

Daily: Wipe up any spilled food at once.

Wipe top of refrigerator with a cloth wrung out in soapy water. Rinse with a cloth wrung out in clear water. Dry.

Remove any fingerprints around the handle of the door with mild soap and water. Rinse and dry as above.

Weekly: (This cleaning is usually done after defrosting. Unless your refrigerator is equipped with an automatic defrosting device, it should be defrosted whenever the accumulation of frost is ¼-inch thick.)

Empty the pan under the freezing unit, wash in warm suds, rinse thoroughly and dry.

Remove freezing trays, empty and wash in hot soapsuds. Rinse with scalding water and dry. Remove racks or shelves and wash in the same way. Wash interior and exterior the same way as for an ice refrigerator (below).

Follow the manufacturer's directions for oiling the motor at regular intervals. (With most new models no oiling is necessary.)

II. *Ice Refrigerators*

Daily: Same as for automatic refrigerators.

Weekly: Remove racks or shelves and wash them in hot soapsuds. Rinse with scalding water and dry thoroughly.

Wash interior with a cloth wrung out of cool water in which borax or baking soda has been dissolved. (1 tablespoon of borax or soda to 1 pint water.)

Pour a strong solution of washing soda and water down the drain pipe and use a long brush to remove any accumulation of dirt or slime.

Remove drain pipe for cleaning if necessary.

Wash exterior with mild soapsuds. Rinse with a cloth wrung out of clean water, dry thoroughly.

Note: Be sure ice is washed before it is put into the refrigerator. Dissolve baking soda in cool water and pour over the ice occasionally to keep drain pipe fresh and sweet.

Ranges

A little foresight will prevent any difficult cleaning. Avoid boiling-over accidents (and save fuel) by turning the heat down as soon as the boiling starts. The temperature of boiling water is the same, whether it is boiling furiously or slowly. Provide a pie pan or small tray for the stirring spoon, fork and ingredients that are to be added during cooking, to protect the top of your range from sticky spots and spills.

I. *Gas Ranges*

Daily: Wipe up any spilled food before it dries.

Wipe the surface and drip tray with a damp cloth.

If the *oven* is used let it cool off and then clean off any spatterings with mild scouring powder and fine steel wool. Charred material can be removed with a brush or spatula. In many modern gas ranges the oven bottom can be removed for easy cleaning.

If the *broiler* is used, let it stand and cool until the fat is solidified. (Never pour fat down the sink drain!) Scrape out the solid fat with a rubber plate scraper and wipe out any remaining fat with a paper towel. Wipe rack with paper towelling. Wash rack and pan in hot soapsuds; rinse with hot water; dry thoroughly.

Wash the inside of the broiling compartment with a cloth wrung out of hot soapsuds. Rinse with a cloth wrung out of clear water. Dry.

Caution: Never wash enamelled surfaces when they are hot, or the finish may craze and crack.

Occasional: The right kind of daily care should make it unnecessary to use drastic measures for cleaning the burners. They can be removed occasionally and washed with a brush and hot, soapy water, rinsed with clear hot water, drained and thoroughly dried. If you should happen to move into a house where the gas range has been badly used and neglected,

and if the burners are cast iron, you may have to resort to boiling them in a solution of ½ to 1 cup washing soda and water in a large enamel pan. (Washing soda darkens aluminum.) Clean clogged holes in the burners with wire, and wash as above.

Modern burners of aluminum, chromium or enamel are so constructed that if food boils over it spills beyond them. Burners of these types need only be wiped with a damp cloth to keep them in good condition.

II. *Electric Ranges*

Daily: The care of the enamelled surface, oven and broiler is the same as for gas ranges (page 249). In some models the oven heating element can be removed while the oven is being cleaned.

Caution: Never wash enamelled surfaces when they are hot or the finish may craze and crack.

Occasional: If food boils over or spills on the top stove unit it can be burned off. If these units are the open type, with exposed coils, turn the heat high until the food is burned off. Let the unit cool, then blow out the charred particles. (The flat tool attachment of your vacuum cleaner makes a quick job of this.) Never brush or poke this type of unit. Another method is to sprinkle the inside of a tin pie pan or layer cake pan with water and invert it over the unit. Turn the heat high and leave it for 10 minutes. The resulting char can be blown off.

Caution: The pie or cake pan must fit on the metal ring around the unit; if it touches the enamel it will cause crazing.

If the units are the closed type, burn off the food with high heat, then let the unit cool and remove charred particles with a stiff brush. Never use a knife or fork for this work. Closed units may be wiped with a cloth wrung out of warm, soapy water, rinsed with a cloth wrung out of clear warm water, and dried.

Keep the metal ring which surrounds the element clean and shining. A cloth wrung out of soapsuds will usually do the job. Rinse with a cloth wrung out of clear water. If food is stuck or burned on use a little mild scouring powder or fine steel wool to remove it.

III. *Kerosene Ranges*

1. Be sure that the range is absolutely level or the flame will be smoky and uneven.

2. Burner bowls, wicks and fuel line must be cleaned regularly. It is a good idea to follow the manufacturer's directions explicitly.

Burner bowls (chimneys) are usually cleaned with fine steel wool and soapy water. The holes at the base must be free of dirt and dust.

Wicks and wickless kindlers must be kept free of carbon for efficient burning and freedom from disagreeable odor. Some authorities recommend cleaning after every twelve hours of burning. We suggest cleaning at least twice a week.

Wicks should never be cut. A special wick cleaner, or a soft cloth should be used. The cleaner removes char and gives the wick a bevel or chisel edge with the highest point on the outside. This edge is important because it produces the best type of flame for cooking. If a cloth is used, wipe from the center out to produce a bevelled edge.

New wicks are needed when the old ones are worn down to the metal carriers.

Wickless kindlers must be kept free of carbon, also.

A high blue flame with closely spaced yellow tips extending about 1¼ inches above the blue assures you that the burner is operating correctly.

Wick tubes should be wiped clean whenever the wicks are trimmed.

Flame spreader perforations can be kept open and clean with a soft brush.

The fuel line should be drained and cleaned every three months. Remove the reservoir or tip it back. Remove the cap on the end of the feed pipe and push a stiff wire through the pipe. Pour clean kerosene through the pipe to clean it.

IV. *Wood and Coal Ranges*

Do not attempt to clean or polish this type of range while there is a fire in it. Let the fire go out and when the range is barely warm proceed with the cleaning:

1. Remove all ashes.

2. If the range is made of cast iron, use *nonflammable* stove blacking (read the label to be sure). Paste polish, plus rubbing, gives excellent results.

3. If the range is enamelled the care of the surface is the same as for gas ranges (page 249).

4. Polish metal trim (page 208).

5. If the range has been equipped with oil burners, follow the manufacturer's directions for care of burners and wicks.

Sinks

I. *Baked Enamel*

1. Remember that the enamel surface is basically glass. Be careful not to drop heavy utensils or scrape them over the surface.

2. Unless the finish is stain-resistant never let acids come in contact with it, or the glaze will be destroyed.

3. Soap and water or a mild scouring powder will keep an enamelled sink clean and in good condition. Avoid harsh scouring powders which dull the glaze and make the surface harder to clean.

4. Rust stains may be removed by following the methods suggested on page 244.

II. *Monel or Stainless Steel*

1. These metals are acid-resistant.

2. Soap and water or a mild scouring powder will clean the surface. After rinsing, use a clean dry cloth to dry the surface and produce a soft sheen.

3. A patina is built up with use and in consequence these metals are increasingly easy to clean.

III. *Metal Fixtures* (see page 244)

IV. *Drain Traps*

1. Never flush anything down the drain that may clog it, such as grease, coffee grounds, large food particles, etc.

2. After each use flush very hot water down the drain to carry off any grease and leave the trap full of clean water. Dirty water left in a drain trap gives off an unpleasant odor.

Garbage Cans

1. Always line the can with paper. Moisture-proof liners to fit the can may be purchased, or you can use grocers' brown paper bags.

2. Garbage should be well drained before it is put in the can.
3. Empty the can at least once a day.
4. Wash at least once a week with soap powder and hot water. Rinse dry. A long-handled brush is convenient for this work.
5. Sun and air the garbage can after washing.
6. Disinfect occasionally with a safe household disinfectant. Follow the directions on the package.

Order of Work for Cleaning Kitchen

Daily Care

1. Open windows top and bottom for free circulation of air, or open kitchen ventilator.
2. Rinse and stack dishes, pots and pans.
3. Check and reorganize foods; put away.
4. Collect all refuse and put in garbage can.
5. Wipe off top of refrigerator and all work surfaces in need of cleaning.
6. Wash dishes (for special care of dishwasher, see page 221). Dry and put away, if not room to rinse with hot water and leave to dry.
7. Wipe off surface of range. Clean spilled food from drip pan or oven.
8. Dry damp work surfaces.
9. Dust radiator or register (page 207).
10. Take out garbage; put clean lining in garbage can.
11. Clean sink (page 252). Rinse dishcloth or mop; hang outdoors if possible.
12. Collect soiled towels; wash. Hang fresh towels.

Weekly Care

One day each week additional care should be given the kitchen.

1. Put away all foods except those belonging in refrigerator.

   Remove all foods from refrigerator.

   Wash interior of refrigerator (special care of refrigerator, page 248).

   Return food to refrigerator.

2. Clean range thoroughly (pages 249–252).
3. Clean, scald and sun vegetable bins, bread and cake boxes.
4. Clean out and wash 1 cupboard or several drawers in rotation, weekly.
5. Dust lighting fixures; take down globes and wash when necessary.

   Dust window shades or Venetian blinds (page 171); wash or thoroughly clean when necessary.

   Wash wall behind sink, stove and work surfaces, if washable (see index for types of walls). Wash work surfaces. Wash exterior of cabinet work and shelving to remove fingermarks.

   Take down curtains for laundering when necessary.

   Brush ceiling when necessary.

   Wash woodwork and windows when necessary.
6. Clean garbage container thoroughly.
7. Clean metal fixtures (page 244), soap dish, sink strainer, dish drainer and sink (page 252).

   Wash, rinse and scald dishcloth or mop or send to laundry; hang outdoors if possible.
8. Dry work surfaces if necessary.

SECTION THREE

Laundering

CHAPTER XX

LAUNDRY EQUIPMENT, WATER SOFTENERS AND SOAPS

Equipment

Every job is easier if proper tools are at hand, and laundering is no exception to the rule. The type of equipment you need depends upon the amount of laundering that is done at home, and whether you have a laundry room or do the laundry work in the kitchen.

The following list is a maximum one, but it will serve as a useful guide and can be adapted quite easily to your own needs. Problems of laundry planning and organization are discussed on page 38.

Structural Equipment

Hot water supply
Floor drain
Laundry trays (tubs)
Gas or electric dryer (optional)
Good lighting (page 43)

Portable Major Equipment

Washer
Ironer
Sorting table (if not built in)

Small Equipment

One- or two-burner gas or electric unit for making starch, etc.
Stain-removal materials (page 314)
Mending basket

Household scales
Soaps
Water-softening compound (below)
Bluing (optional, page 265)
Chlorine bleach
Starch (page 265)
1–2 saucepans
Measuring cup
Measuring spoons
Thermometer (optional)
Plunger-type washer (for hand washing)
Hand-operated wringer (if all family washing is done by hand)
Soft brush
Whisk broom
Indoor drier (optional)
Clothesline
Clothespins
Clothespin bag
Clothesbasket
"Express wagon" or stand on wheels for clothes basket
Sprinkling device
Cardboard for blocking knitted goods (optional)
Forms for drying knitted garments, gloves and socks
Rustproof pins
Curtain stretchers (optional)
Paper towels
Electric hand iron
Ironing board (if not built in)
Sleeve board
Stool or chair (optional)
Rubber mat (optional)
Clothesrack
Dress hangers
Pressing cloths

Even the finest equipment won't assure complete success in laundering unless proper soaps, cleansers, water softeners and methods are used.

Water Softeners

Those of us who live in vicinities where the water is "soft" can count this condition among our major blessings, because "hard" water, which is native to many sections of the country, is the bane of a

housekeeper's life. A permanently installed water-softening system is, of course, the best solution to the problem, and well worth the investment (page 458). However, if it is not possible to have such a system installed, other methods can be used to soften the water for laundering purposes. In many rural households rain water (which is soft) is accumulated.

The mineral salts in hard water unite with soap and form curds. Dirt particles combine with these curds which find their way into fabrics and make them look sadly gray and dingy. Any one of a number of materials may be used to soften water. Soap itself will soften water if enough is used, but in extremely hard water this is an expensive method. Many modern soaps contain ingredients which are sold separately as water softeners. These ingredients materially affect the amount of additional soap or other softener that needs to be used. Water-softening agents such as borax, washing soda, trisodium phosphate, or commercial softeners with a trisodium phosphate base or some complex phosphate base are commonly used.

Borax is a mild softener and while more expensive to use and less effective than the others, it is safer than some of the others for washing woolens, silks and all delicate fabrics. It is more effective when it is added to water before soap is added. When scum has formed it is removed and then soap is added. This is called a "pre-treat."

Washing soda or sal soda is strong but is harmless to cotton and linen fabrics *if it is properly used*. It is harmful to wool and silk. It must be completely dissolved, as undissolved particles destroy textile fibers. To be most effective it should be used like borax, in a "pre-treat." The film that rises to the surface should be skimmed off before soap is added.

Trisodium phosphate acts more quickly than washing soda and is excellent for use with white cottons and linens, and can be used for silks, woolens and rayons in mild solution. It will not attack colors that are guaranteed fast to washing, if the correct amount is used. It gives somewhat better results if used in a "pre-treat," like borax, but may be added with the soap if desired.

One commercial product is called a water "normalizer" rather than "softener." The technically minded may like to know that this product has a *sodium hexametaphosphate base*. This preparation is a clear white salt and does not form soap curds or scum in water. Therefore it can be added with the soap. It is harmless to all fabrics and to the skin. Follow directions on package for best results. Still another compound has what is scientifically known as a *tetraphosphate base*. It is pinkish-orange in

color but a color change takes place when it is added to water. The correct amount colors the solution pale green. Too much imparts a yellow tinge. No scum is formed.

The degree of hardness in water varies in different localities, and is measured in "grains" or in parts per million (ppm):

0–3 grains—soft water (0–51 ppm)

3–6 grains—moderately hard water (51–102 ppm)

6–18 grains—hard water (102–307 ppm)

18 grains—very hard water (307 ppm)

The amount of water softener to use depends on the degree of hardness of the water. No specific recipe can be given, but a few general directions may be a helpful guide.

In many localities it is possible to find out from municipal or state headquarters the degree of hardness of the water and to get advice as to the quantity of specified softener to use.

Borax may be sufficient for water that is only slightly hard. Use 2 or more level tablespoons per gallon of water. Borax is safe to use in washing silks, rayons and wools.

If you are using washing soda or *trisodium phosphate* you will find that the following proportions are usually correct:

Amount of Water	Degree of Hardness	Washing Soda	Trisodium Phosphate
10 gallons	Fairly soft	1–2 level tbsp.	1 level tbsp.
" "	Moderately hard	3–4 " "	1–2 " "
" "	Very hard	5–7 " "	3–4 " "

There is one way in which you can find out exactly how much washing soda or trisodium phosphate to use. It will take a little extra time, but will save that much time, and more, on subsequent wash days:

1. Fill washer or tub with hot water, measuring the water by the gallon unless you are sure of the washer's capacity when filled to the water line.
2. Add ½ level teaspoon of softener *for every gallon of water;* mix well.
3. Wait 5–10 minutes for softener to react and form a scum.
4. Dip out 1 quart of water.

5. Add 1 level measuring tablespoon of the soap you use for laundering to the quart of water.
6. Agitate the soap and water with a spoon. If a lively suds forms, the water is soft enough.
7. If not, add more softener, ¼ level teaspoon of softener for every gallon of water, and wait for it to work. Repeat the soap test with a quart of this water.
8. Keep this up until you are able to produce a lively suds.
9. Write down the total amount of softener you have added to the water in the washer in order to get the desired results.
10. Use this amount of softener in the water every time thereafter.
11. With these types of water softeners, always be sure the softener is completely dissolved, wait for scum to rise and remove it before soap is added.

Remember that it is extremely important to use soft water for the first rinse, to get out every bit of soap and suspended soil.

Soaps

Modern machinery converts soap into a wide variety of forms which influence the speed and thoroughness with which it dissolves: bar or cake soap for the bath, soap in the form of chips, beads, flakes, granules and powder for laundering, dishwashing and other housekeeping tasks, to speed up the work.

Silks and woolens demand a mild soap;* cottons and linens may be washed with an all-purpose soap. Strong soap should be used only on very soiled, sturdy garments such as overalls and other work clothes.

"Soapless" soap is a detergent which is like soap in its action, and is intended for washing fine materials. Because these soapless detergents do not form insoluble compounds with the mineral salts that cause hard water they do not leave scum or deposits on the fabrics.

Little odds and ends of mild bar soap need not be thrown away. Make them into *soap jelly,* which can be used for laundering purposes with great success. Cut the pieces very small and dissolve ⅓ cupful in 1 quart hot water. Cool and set aside to jell.

The amount of soap required for washing depends on several factors: the type of fabric, type and quantity of soil, hardness of water,

*"Mild soaps," generally speaking, are those advertised as being made especially for delicate or fine fabrics as against those advertised as general laundry soaps.

temperature of water, etc. Thus it is practically impossible to standardize the amount of soap to be used. The important thing is to use enough to produce good standing suds. If the suds break down and disappear during the washing operation, more soap should be added, to produce sufficient suds.

When water is heavily soiled it is impossible to produce good suds. Fresh water and fresh suds should be used several times during a large family laundering.

Bleaches and bluings are discussed on page 265.

CHAPTER XXI

WASHING METHODS

It used to be a matter of pride to get the wash on the line as early Monday morning as possible. Now we wash on any day of the week and at any hour that is convenient. Sunday leaves an accumulation of work that must be done on Monday, and washing on that day is often too much of an extra burden. Tuesday is a far more sensible choice. And if weather, temperaments and schedules so dictate we can stretch washday over several days. In families where silk and rayon undergarments make up a sizable part of the work it may be preferable to have a separate washday for these pieces, because the procedure (page 282) is different in many respects from the procedure for houshold cottons and linens.

Procedure for Household Cottons and Linens

Sorting

1. Separate clothes into piles according to type and color:
   Table linen—white and colored
   Bed linen and towels—white and colored
   White and colorfast cotton and linen garments
   Colored cotton and linen garments, not colorfast (for washing directions see page 287)
   White silks and rayons (for washing directions see page 282)
   Colored silks and rayons (for washing directions see page 282)
   White woolens (for washing directions see page 289)
   Colored woolens (for washing directions see page 289)
2. Subdivide these piles, if necessary, into lightly soiled and heavily soiled pieces.
3. As you sort the clothes, watch for spots and stains that have escaped notice, and remove them before the articles are washed (page 312).
4. Mend rips and tears before washing (except in undergarments and stockings) to save time and stitches later on.
5. Remove pins and clips.

6. Empty pockets.
7. If you are not absolutely certain that any new article is colorfast to washing (page 287), put it aside and wash it separately the first time (page 287).
8. Handkerchiefs that have been used by persons suffering from colds or sinusitis should never be put in the hamper, and should be laundered separately (page 297). (The use of soft paper tissues by these sufferers is to be highly recommended, as they may be disposed of quickly after use, lessening danger of infection.)
9. "Special Laundering Problems"—see page 281, for complete directions for laundering articles requiring special care.

Soaking

1. Overnight soaking is not necessary but is sometimes more convenient. Fifteen to thirty minutes is long enough for white cottons and linens. Colorfast cottons and linens may be soaked as long as twenty minutes.
2. *White cottons and linens:* Use enough lukewarm to cool water to cover clothes generously and make a light suds. This treatment removes surface dirt and certain types of soil which are set by hot water and made very difficult to remove. Soften the water if necessary (page 256) before adding soap.
3. Some authorities prefer a preliminary wash in cool suds to soaking, if a washer is used.
4. Extract the soiled water thoroughly by wringing or spinning (page 268) before putting the clothes in the wash water.

Washing

The procedure is much the same whether clothes are washed by hand or by machine. A washing machine, however, saves time, spares strength and is easier on the clothes.

In a Washer

1. Fill washer to the water line with water of correct temperature (130° F. for white cottons and linens; 110° F. for colored fabrics).
2. Add water softener, if necessary (page 256).
3. Add measured mild soap (in flake, chip, powder or bead form, or shaved bar soap) in the amount necessary to make standing suds (page 259).

4. Operate the washer until the soap is completely dissolved and there is a topping of suds 2–3 inches deep.
5. Add the correct load of clothes as suggested by the manufacturer. Be careful not to overload or the clothes will not wash clean. Different makes and models of washing machines vary in capacity, so follow the manufacturer's directions. In general, a safe average load is from 6 to 8 pounds of dry clothing. Never put in more clothes than will circulate and move about freely. Overloading puts a strain on the washing machine and prevents a satisfactory and thorough washing and rinsing. The chart on page 270 will give you average weights of various articles and help you in making up the correct load. A mixed load, consisting of several large pieces such as sheets, and several smaller pieces such as pillowcases, makes for better circulation in the washer.
6. Wash rumpled or lightly soiled white articles first, then more heavily soiled pieces. Colored articles are washed in this same order.
7. Time the washing period:
   5 minutes for rumpled or lightly soiled articles
   10–15 minutes for heavily soiled articles
8. If clothes are not clean at the end of this time, wash them a second time for 4–6 minutes in fresh, clean suds.
9. If stubborn soil remains on certain areas, scrub gently with a soft brush and thick suds until clean. It is much better practice to wash clothes before they become too heavily soiled, and thus avoid scrubbing.
10. If the water is soiled after one load of clothes is washed, drain it off and prepare fresh suds for the second load. If water supply is limited, it is possible to wash two or three loads of rumpled or lightly soiled pieces without changing the water. Hot water must be added to replace that which has been absorbed by the clothes in the first load, and more soap should always be added if the suds have broken down.
11. Extract the wash water thoroughly by wringing or spinning (page 268) before putting the clothes in the first rinse water.

By Hand

1. Soften the water if necessary (page 256).
2. Add enough measured soap to make a standing 2″ suds (page 259).

3. Wash rumpled or lightly soiled articles first, then the more heavily soiled pieces.
4. Squeeze, don't rub. (A scrubbing board is an old-fashioned implement of torture—it tortures both clothes and knuckles!)
5. Keep clothes under water while you work.
6. Hand vacuum washers of the plunger type keep your hands out of water.
7. Scrub stubbornly soiled areas lightly with a soft brush and thick lather, working on a flat surface.
8. Wring out wash water before rinsing.

Rinsing

In a washer—This step in getting clothes clean is just as important as washing because rinse water flushes out both soap and any remaining loosened soil. All too often rinsing is not thorough enough for good results. Clean soft water must be used for each rinsing, and must be extracted from the clothes after each rinse by wringing or spinning. If clothes are not rinsed enough times, if the rinse water is soiled, if it is not extracted each time or if the water for the first rinse is not soft, the clothes will look gray and dingy.

1. Soften water for first rinse if necessary (page 256).
2. Many authorities recommend adding soap to the first rinse—half as much as for washing. This helps to flush out loosened soil and dirty curds, and prevents soap curd from forming in the second rinse water and adhering to the fabric.
3. If all rinsing can be done in the washer, so much the better, because it is done much more efficiently and easily this way. However, if several loads are being washed, it saves time to rinse the first load once or twice by hand while the second load is washing. Use a plunger-type washer to keep your hands out of water. *Always give the clothes a final rinse in the washer.*
4. Time the rinsing period:

   5 minutes for the first rinse

   3–4 minutes for the second and third rinses
5. The temperature of the first and second rinses should be about the same as the wash water. The last rinse should be cool.

By hand—More rinses are necessary if a washer is not used. Rinse until the water is clear, extracting water after each rinse.

Bluing

1. Contrary to the general notion, bluing does not whiten clothes. It merely corrects the yellow tinge which white articles sometimes acquire through age or poor laundering. Therefore bluing is unnecessary unless the articles are yellowed, and it may even impart a grayish tinge if used too often.
2. Never use bluing that contains Prussian blue, or rust spots may appear on the clothes if all the soap has not been rinsed out. Ultramarine and aniline blue do not cause this trouble.
3. Bluing is manufactured in many forms—liquid, solid balls, cubes, powder and in combination with soap flakes. Bluing-soap flakes are used in the wash water; all others are added to the final rinse water. Follow package directions for the kind you choose, and mix it thoroughly with the water, to prevent streaking.

Bleaching

A. White cottons and linens may need to be bleached occasionally. Use a bottled chlorine bleach and follow directions carefully as to the quantity to use.

1. Mix the bleach thoroughly with the *first* rinse water.
2. Rinse at least twice after the bleach is used. If any bleach is left in the fabric it may weaken it seriously.
3. Be careful not to spatter the undiluted bleach on other clothes, as it will remove color and weaken fibers.
4. Sunshine is a natural bleach and clothes always dried out of doors in the sun may need nothing more. Extra moisture left in the clothes after the final rinsing increases the bleaching action of sunshine.

B. White silks or delicate cottons and linens that have yellowed may be whitened with one of the "stripping compounds" sold by dye manufacturers for removing color from silks. Follow directions on the package. Stripping compounds will not injure any fabric that is not harmed by boiling water. *Never use a chlorine bleach on silk or wool.*

Starching

The addition of the correct amount of starch improves the appearance and finish of many articles. Starched pieces also shed soil more readily.

Haphazard methods of making starch are almost as disastrous as haphazard methods of making cake. Accurate measuring, careful cooking and the right method are all essential to success.

General Directions:

1. Hard water should never be used in making starch. Use borax to soften water that is naturally hard (page 256). Never use washing soda, as it tends to make the starch yellow.
2. Read the manufacturer's directions carefully and follow specific directions for specific purposes.
3. Wring rinsed clothes as dry as possible. Shake out each garment thoroughly and turn it inside out before immersing in starch mixture.
4. Use enough starch mixture to cover garments.
5. *Dipping is not enough;* immerse garment and press between hands to force starch through.
6. If a fine finish is desirable, rub and pat the starch mixture evenly into the fabric.
7. Remove excess starch by wringing. If wringing is done by machine, use thicker starch, as more is removed than when clothes are wrung by hand.
8. Hang starched clothes to dry immediately to prevent mould.
9. When garments are thoroughly dry, turn right side out and sprinkle, unless garments are to be ironed on the wrong side.
10. Iron starched dark-colored garments on the wrong side.

Many factors affect the stiffening quality of starch, and it is almost impossible to give exact proportions for various fabrics. Personal preferences vary, also, and what one person considers stiff another person would consider only moderately stiff. However, the following basic starch recipe and our suggestions as to its uses will serve as a guide:

Basic Starch

½ cup starch or 14 starch cubes

½ cup cold water — 2½ quarts boiling water

Mix starch and cold water to a smooth paste. Add boiling water gradually, stirring constantly. Cook over low heat, stirring constantly,

until clear (about 5 minutes) or cook over hot water, stirring frequently, until clear (about 15–20 minutes). Strain through very fine strainer or cheesecloth.

Uses

Articles to be Starched	*Basic Starch*	(*Diluted with*) *Lukewarm Water*
Children's clothes	1 part	4–5 parts
Dresses (cotton, organdy, dotted swiss)	1 part	5–6 parts
Collars and cuffs (piqué, organdy)	1 part	5–6 parts
Blouses (sheer, cotton)	1 part	5–6 parts
Glass curtains (marquisette, organdy, net, gingham)	1 part	5 parts
Ruffles	undiluted	
Uniforms (entire garment)	1 part	3–4 parts
Aprons, caps, collars, cuffs and belt of uniform	1 part	1 part
Shirts (collars, cuffs, front pleat)	1 part	2 parts
(fine finish for collar)	1 part	1 part
Dress shirt	undiluted	
Slacks (cotton)	2 cups added to last rinse water.	

(Heavier materials require less starch than lighter-weight materials.)

Troubles and Remedies

Sticking

1. Insufficient cooking.
2. Careless straining.
3. Allowing "skin" to form on starch after cooking. (Keep starch closely covered and stir occasionally to prevent skin from forming.)
4. Iron not hot enough.
5. Excess starch on surface of garment.

Limpness

1. Garment not wrung dry before starching.
2. Drying in moderate or strong wind.
3. Freezing on clothesline.
4. Drying in damp atmosphere.

Tinting Starch

Sometimes white starch shows on the surface of a dark-colored garment after it is ironed. *Bluing* may be used to tint starch for dark-blue materials, and clear *tea* to tint starch for brown or ecru fabrics. Commercial tints may be used to color starch also.

Freshening Fabrics

If a silk, rayon, organdy or lace garment is limp and unattractive, the finish can be improved by dipping it in a gum-arabic solution:

Silk or Rayon: Add 1 pint boiling water to 1 ounce powdered gum arabic (purchased at drug store). Stir over low heat until gum arabic is *completely* dissolved. Dilute with 2 to 3½ quarts lukewarm water according to stiffness desired. Dry garment quickly after dipping.

Organdy or Lace: Add 1 quart boiling water to 1 teaspoon powdered gum arabic. Cook as above. Add 1 quart cold water. Cool to lukewarm.

Extracting Water

Wringing

1. Adjust the rolls for correct pressure according to the size and thickness of the pieces.
2. Shake out each piece.
3. Straighten the article as it is fed through the rolls.
4. Fold all buckles and buttons inside.
5. Hold garment out from wringer so that buttons go through flat.
6. If a piece winds around the rolls, *stop the wringer at once* and untangle it.
7. Never put pieces through corner first, or bunched up. Pieces that are wider than the wringer may be folded lengthwise and fed straight into the wringer. *Precaution:* see page 102.

Spinning

1. Wind the pieces evenly against the sides of the spinner basket, packing them down firmly.
2. Do not overload. One washer load is one spinner load.
3. Run the spinner 2–3 minutes for each load.

Drying

1. The clothesline should be adjusted to your height so that you can reach it comfortably.
2. Clean a rope clothesline with a damp cloth before each use. To clean a wire line, rub with a cloth dampened slightly with kerosene, then rub with a dry cloth.
3. Clothespins should be clean, smooth and entirely free from splinters.
4. Before you take clothes into the yard, sort them so that like pieces are together. Hang like with like to save time later on in sprinkling and ironing.
5. Hang a clothespin bag on the line and push it ahead as you go to save steps and energy.
6. Place clothesbasket on a child's express wagon or a rack on wheels to save stooping and lifting.
7. Hang white cottons and linens in the sun, and colored fabrics in the shade or indoors.
8. Hang large pieces first because small pieces can be fitted into remaining spaces.
9. Never hang any piece by the corners; this causes torn hems.
10. Fold sheets and tablecloths hem to hem, wrong side out, and hang lengthwise with ⅓ of double thickness over the line.
11. Hang towels, pillowcases, etc., squarely over the line for about ⅓ of their length.
12. Summer dresses made of fine washable fabrics should be hung on rust-proof dress hangers and preferably dried indoors.
13. Two or three handkerchiefs or napkins may be hung together.
14. Use clothespins where there is the least strain, and use enough to hold each piece securely.
15. When the washing is taken down, smooth each piece and fold it carefully, keeping like pieces together. A little time spent now will save a great deal of time in sprinkling and ironing later.

16. If possible take down clothes while still damp, to save necessity for sprinkling.

Sprinkling

1. Use warm water. It penetrates the fabric more evenly and more quickly.
2. Sprinkle as evenly as possible.
3. Sprinkle large articles one at a time, smoothing out as many wrinkles as possible. Handkerchiefs and napkins may be placed in a pile, sprinkling every third piece.
4. Heavy fabrics such as pure linen damask should be sprinkled until thoroughly wet. Hems, collars, cuffs, etc., should be sprinkled a little more generously than thinner areas, then folded inside.
5. After sprinkling, roll the pieces up smoothly and firmly. Several handkerchiefs, napkins or tea towels may be laid in an even pile, and rolled together.
6. Pack rolls firmly in a clothesbasket and cover with a clean cloth; or wrap in a rubber sheet.
7. In cool weather sprinkled clothes may be left overnight, but in hot humid weather mildew may develop if they are left more than two or three hours.
8. Colored clothes should not be sprinkled until immediately before they are to be ironed.

Table of Approximate Weights of Dry Clothes

Name of Article	*Kind and Size*	*Number*	*Approximate Weight*
Sheet	Cot (54″ x 90″)	1	¾ pound
Sheet	Twin (63″ x 99″)	1	1 pound
Sheet	Three Quarters (72″ x 99″)	1	1 pound
Sheet	Double (81″ x 99″)	1	1¾ pounds
Sheet	Extra Large (90″ x 108″)	1	2⅕ pounds
Pillowcase	45″ x 38½″	3	1 pound
Tablecloth	2½ yards long	1	2 pounds
Tablecloth	1½ yards long	1	1 pound
Tablecloth	Luncheon (36″ x 36″)	2	1 pound
Napkin	Dinner (22″ x 22″)	8	1 pound
Napkin	Luncheon (16″ x 16″)	8	1 pound

Name of Article	*Kind and Size*	*Number*	*Approximate Weight*
Napkin	Luncheon (12″ x 12″)	16	1 pound
Towel	Linen hand towel	6	1 pound
Towel	Bath (24″ x 44″)	3	2 pounds
Towel	Bath (20″ x 34″)	3	1 pound
Towel	Guest	8	1 pound
Wash cloth		16	1 pound
Clothing			
Pajamas	Cotton	3 pairs	2 pounds
Nightgowns	Silk or Rayon	3	1 pound
Nightgowns	Cotton	2	1 pound
Slips	Silk or Rayon	3–4	1 pound
Shirts	Men's	2	1 pound
Shirts	Boys'	4	1 pound
Dresses	Women's cotton	2–3	1 pound
Dresses	Child's cotton	3–4	1 pound
Rompers	Baby's	5	1 pound
Diapers		3	1 pound

Care of the Washing Machine

After each use

1. Remove all lint from the washer and drain or strainer.
2. Wash the interior of the washer and spinner with warm soapsuds. Rinse thoroughly with clear water; dry.
3. Wash the wringer rolls with warm soapsuds; rinse.
4. Loosen the tension on the wringer rolls.
5. Leave the washer cover slightly ajar between uses.

Special care

1. For care of cord, see page 396.
2. Follow the manufacturer's directions for oiling the motor and the wringer mechanism.

CHAPTER XXII

IRONING PROCEDURES

There is no getting around the fact that skillful ironing is an art acquired only by experience and practice. No one is a "born ironer" but any one with an ounce of patience and two ounces of perseverance can become expert. It is a really worth-while accomplishment too, because perhaps nowhere else but in the field of cookery is there such a genuine pride of achievement.

Nowadays we have the streamlined light-weight electric hand iron and the electric ironer to speed the work and spare the worker. Whichever you use, there are a few general rules to help you on your way to becoming an expert ironer:

1. Remember that the amount of heat in the iron or ironer does not change the instant you turn the switch from one position to another. For this reason, it is best to start with fabrics needing low temperatures and work up to heavy damp linens which need high temperatures.

2. When you straighten material on the ironing board or roll of a rotary ironer, use the palms of your hands and smooth from the center out. Your fingers are apt to stretch the fabrics and pull them out of shape.

3. Iron with straight strokes, with the thread of the fabric.

4. Iron each section perfectly dry before you start on the next.

5. Collars, cuffs, sleeves, belts and trimmings are ironed first, then the flat sections of the garment.

6. White and light-colored cottons and linens are ironed on the right side, dark cottons and linens on the wrong side; silks and rayons on the wrong side; damask first on the right side, then on the wrong side.

7. If folds in flatwork are always made in the same place, the wear on the fabric from creasing will cause the fibers to break. Sometimes fold in thirds and sometimes in fourths to avoid this strain.

8. Hang all ironed pieces on a rack where they may dry thoroughly before putting them away.
9. Save labor in folding and improve the appearance of garments by using coat hangers for blouses, dresses and shirts.
10. Do not use too hot an iron or shoe. Most hand irons are thermostatically controlled. Ironers are also equipped with thermostatic controls so that you can select the proper heat for the fabric.

    Cotton and linen—relatively hot

    Wool and silk—moderate heat

    Rayon—low heat

    Acetate rayon (page 281)—very low heat

    Combinations of fibers—adjust heat to fiber needing lowest temperature

Ironing by Hand

Tests have proved that steady even heat, not pressure, is the essential factor in ironing, and so now we have 1000-watt irons weighing not more than 3–4½ pounds. Don't offset this advantage by leaning heavily on the iron and tiring your arm muscles unnecessarily. Use slow easy strokes, letting the iron do the work.

If you can iron comfortably sitting down, choose a kitchen chair of proper height. If you feel that you can do a better job standing up, comfort your feet with a resilient rubber mat. The ironing board should be adjusted to correct height—32½ inches from the floor is correct for workers of average height.

Remember that an electric iron can be plugged into a wall socket anywhere. (Never plug it into a light socket.) If the north bedroom is the coolest spot in the house on a broiling July day, that is the logical place to take your ironing.

Place the clothesbasket at your left, a clothes rack at your right, and be sure there are coat hangers near at hand.

When you are ironing a sheet or a long tablecloth, don't put newspapers on the floor to catch the ironed portion, or the news may be imprinted on the cloth! Use unbleached muslin, or a specially designed shield now on the market, attached to the ironing board.

Machine Ironing

Whether your ironer is the rotary type or the flat plate type, remember that the heated shoe is the equivalent of an iron, and the pad or roll is the equivalent of an ironing board.

Modern ironers are equipped with easy-rolling casters, so that they may be moved into any room in the house, or even on the porch, if the wiring is adequate.

Several manufacturers of good electric ironers have taken great pains in preparing explicit instruction books so lavish with photographs, diagrams and explanatory captions that you can almost learn by looking. A little time spent with the book before you begin to practice, and the habit of keeping it close at hand as you iron, to help you with problems that arise, will save hours of trial-and-error.

Undoubtedly the largest proportion of the ironing to be done consists of flatwork. This is a blessing in disguise, because flatwork is so easily done on an ironer that you can concentrate on learning to operate the controls. When this has become as automatic as driving the family car, you are ready to start on more difficult pieces. Best of all you will be encouraged all the way, by the excellence of the work you turn out, whereas if you started your practice with a complicated garment like a man's shirt, you might well consider yourself very inept in the whole matter of ironing by machine.

By the way, when you have progressed by easy stages to the point where you feel you can tackle a shirt, first be sure your husband's dresser drawer or closet is stocked with well-ironed shirts. Then select an old shirt that is still whole but almost ready for the discard, and practice on it until your skill is assured. In this way, during the time it takes you to acquire perfection, your husband's temper will not be ruffled at the sight of a drawerful of poorly ironed shirts.

Even though you find it takes almost as long to iron complicated garments on the ironer as it does by hand, you can rejoice in knowing that you have been spared fatigue. And because so much time and effort are saved in ironing flatwork, you can spare the time for a little hand-finishing on tricky pieces, if you like.

Tricks of the Trade

Flatwork

1. *Table Cloths:* Fold selvedge to selvedge, right side out. Iron first on one side, then on the other. Fold again, lengthwise. Iron again on both sides. Fold to put away.
2. *Sheets:* If you wish to be especially careful, iron as for tablecloths. Or iron 4 thicknesses at once: fold hem to hem, then fold in half, bringing hem side to fold. Iron first on plain side, then on hem side.

3. *Embroidered Pieces:* Place heavy padding such as a folded bath towel on board or roll. Place the right side of the embroidery on the padding. Iron flat and perfectly dry.

4. *Round Doilies:* Iron from center toward outside edge. Keep turning the doily. Iron in the direction of the warp and filling yarns, not diagonally across them, or the doily will lose its shape.

Curtains

1. *Straight:* Iron selvedge edges first. In using an ironer, fold curtain lengthwise and iron; then dampen center crease and run curtain through ironer flat to remove crease.

2. *Ruffled:* Iron ruffles first.

   By hand: Iron a few inches at a time; finish edge first, then nose iron into gathers.

   On rotary ironer: Iron over open end of roll, holding at an angle, so that point of shoe noses into gathers. Allow ruffle to run off roll every 5–6 inches. Feed in again; repeat until finished.

   On flat-plate ironer: Place ruffles on edge of board and press until dry; then draw back and forth over ruffler attachment.

   After ruffles are finished, iron the body of the curtain, starting at the top hem and ironing downward. Avoid stretching, and iron in the direction of the yarns.

Wearing Apparel

1. *Dresses and Blouses:* Iron in this order: trimmings, sleeves, back, front, collar. Double thicknesses such as hems, collars and cuffs should be ironed first on the wrong side, then on the right. A sleeve board is helpful auxiliary equipment. If material is dark in color, use a pressing cloth when ironing on the right side.

2. *Men's Soft Shirts*

   By hand

   (*a*) *Collar:* Iron on wrong side, then right side until perfectly dry, pulling taut and working from points in. Iron neckband completely dry. Shape collar by hand, iron edge of crease.

   (*b*) *Yoke:* Fold flat and iron dry. Iron armhole seams dry.

   (*c*) *Cuffs and Sleeves:* Iron cuffs same as collar. Nose iron up into gathers. Straighten sleeves from underarm seam; iron on both sides. Iron underarm seam dry.

   (*d*) *Back and Front:* Iron back first, then buttonhole side of

front, then button side of front. Iron both sides of front pleat, holding it taut to prevent wrinkles.

On rotary ironer

(*a*) *Sleeves:* Smooth sleeve from underarm seam out; place on roll, placket side up. Drop cuff below shoe. Iron to shoulder; turn sleeve, iron other side. Iron second sleeve.

(*b*) *Cuffs:* Iron cuffs over open end of roll until dry, first on wrong side, then on right.

(*c*) *Yoke:* Fold shirt straight across back 3–4 inches below yoke. Iron over open end of roll, on a slant, up to collar band. Release shoe. Move yoke so that neck band comes to edge of roll. Finish ironing across yoke.

(*d*) *Back:* Slip shirt over roll with yoke hanging over open end and underarm seam on top. Iron across back to center. Release shoe. Pull shirt to right in straight line so that yoke seam comes to edge of roll. Iron to sleeve. Release shoe. Pull shirt to left so that sleeve extends beyond roll. Finish ironing.

(*e*) *Fronts:* Place buttonhole side on roll with underarm seam at left. Iron from hem to armpit. Pull shirt over to left and iron up to collar. Iron button side in same manner, buttons down.

(*f*) *Collar:* Iron over open end of roll until dry, first on wrong side, then on right. Shape and crease by hand. Iron only edge of crease, over open end of roll.

On flat-plate ironer

(*a*) *Sleeves:* Straighten sleeves from underarm seam. Lay both sleeves crosswise on ironing surface with cuffs hanging over the edge of ironing surface farthest from you. Smooth out wrinkles with palms of hands. Iron. Move sleeves away from you; iron upper half, including shoulder seams. Iron the other side of sleeves in the same way.

(*b*) *Collar:* Place collar wrong side up, in center of ironing surface. Iron. Reverse collar. Iron on right side along left edge of ironing surface. Pull to prevent small wrinkles at points. Crease collar. Iron crease on front edge of ironing surface.

(*c*) *Cuffs:* Place both cuffs, wrong side up, on ironing surface. Iron. Reverse cuffs; iron on right side.

(*d*) *Front* (button side): Place button side of shirt on ironing surface. Pull yoke well up on pad. Pin top and bottom for smooth-

ness. Iron. Turn shirt, placing up to armpit on ironing surface. Iron.

(*e*) *Back:* Iron right side of back, including yoke, placing shirt at a slight angle. Iron left side of back including yoke, then up to armpit.

(*f*) *Front* (buttonhole side): Place on ironing surface with yoke well put on pad. Pin top and bottom for smoothness. Iron pocket all at once.

(*g*) *Yoke:* To crease yoke follow sleeve crease to collar. Place diagonally on the left front edge of ironing surface, with collar hanging over side. Iron. Repeat, using right front edge of ironing surface for opposite shoulder yoke.

Folding a Shirt

(*a*) Place shirt, front up, on flat surface. Button top and bottom button and one in between.

(*b*) Fold each side of shirt under, lengthwise, for about ¼ of the width.

(*c*) Turn shirt over. Fold one sleeve along back. Fold other sleeve on top of first sleeve.

(*d*) Fold bottom of shirt up over cuffs from bottom. Fold lower part up to the collar.

(*e*) Pin shoulder yoke and fold together at both upper corners.

Note: If there is enough closet space, save time by hanging shirts on coat hangers instead of folding.

3. *Men's Washable Suits* (see page 290 for washing directions)

(*a*) Iron linen suits while very damp; seersucker suits when slightly damp, gently stretching to original measurements (page 286).

(*b*) Iron trouser pockets and waistband.

(*c*) Place waistband of trousers over end of ironing board. Starting at fly, iron top of trousers. Remove from board. Place one trouser leg on board, straightening it from the "in-seam."

(*d*) Press crease sharply for the entire length. Repeat, ironing second trouser leg.

(*e*) Hang up to dry thoroughly.

(*f*) Iron body of coat first, keeping lower edge in a straight line, and working from front to back and then to front again.

(*g*) Iron sleeves, collar and lapels.

(*h*) Iron shoulders on extra padding placed over the narrow end of the ironing board.

4. *Pajamas:* Iron like washable suits, above.

Trimmings, etc.

1. *Smocking:* Dry smocked sections with iron. Fluff up smocking with finger tips.

2. *Pleats*

(*a*) Iron hem of skirt first.

(*b*) Pin pleats to pad or ironing board from under side of hem, using rust-proof pins. Be careful not to catch fabric where pin-pricks will show.

(*c*) Iron from bottom to top.

3. *Tatting:* Press tatting, never iron across it. Fingerpress while still damp, then press dry.

4. *Tucks*

(*a*) *Vertical:* Pull taut and hold taut while ironing lengthwise.

(*b*) *Horizontal:* Iron downward from top tuck toward bottom tuck. Iron each section dry before going on to the next, or puckering may result.

5. *Slide Fasteners:* Close before ironing or pressing.

6. *Laces*

(*a*) Place face down on soft pad.

(*b*) Iron from center to outside edge.

(*c*) Lace used as trimming should be ironed from the attached edge outward if it is sewed on flat. If ruffled, iron from outside edge inward.

(*d*) Fragile or rare old lace must be given special care by experts. Museums can advise you where special treatment is given.

7. *Fringe*

(*a*) Do not iron.

(*b*) Comb gently while wet.

Velvet and Pile Fabrics

1. Do not iron.

2. Steam small pieces as follows: Tie several thicknesses of cheesecloth over teakettle spout. When steam emerges, pass the velvet

rapidly back and forth through steam, so the steam passes through the velvet from the wrong to the right side.

3. Send velvet garments or large pieces of velvet or other pile fabrics to a good dry-cleaning establishment for cleaning and steaming.

Pressing

1. *Pressing cloth:* Cloths used for pressing should have a smooth weave so that no imprint will be left on the garment which is being pressed. Light-weight muslin and sateen are especially good. The heavier the fabric to be pressed the more thicknesses of pressing cloth will be needed.

2. *How to Press*

Woolen Garments

(*a*) Place the garment on the ironing surface so that the yarns in the weave run straight. Each time you shift the garment, be sure the yarns lie straight on the board.

(*b*) Dampen the pressing cloth evenly and lightly; place it on the wrong side of the garment to be pressed.

(*c*) Do not use a hot iron. If your iron is heat controlled, set the thermostat at "medium" or "wool."

(*d*) Press down lightly with the iron; *lift it* and press down on the next area. Do not move the iron as you do for ordinary ironing.

(*e*) Do not hold the iron in one spot until the pressing cloth is dry. *The garment should be moist when you have finished pressing it.*

(*f*) Hang the garment on a coat hanger and let it dry.

Silk and Rayon Garments

(*a*) Never use a hot iron. If your iron is heat-controlled, set it at "medium" or "silk" for silk material, or "low" or "rayon" for rayon material.

(*b*) Move the iron back and forth as you do for ordinary ironing.

(*c*) If the garment is not badly wrinkled, press it on the wrong side. If pressed on the right side place a layer of dry cheesecloth between the iron and the garment.

(*d*) If the garment is badly wrinkled and apt to waterspot, place two layers of dry cheesecloth over the material, cover with

a lightly dampened pressing cloth, and iron until the damp cloth is dry. Finish pressing, if necessary, on the dry cloths.

Neckties

There are special electric presses for neckties, but if you do not have one you can do a good job just the same. Cut ordinary untreated cardboard—the kind the laundry uses in packing men's shirts—in the shape of the ends of the tie. Slip the shaped cardboard in the end of the tie and press on the wrong side, with dry cheesecloth between the iron and the tie. Do not use a hot iron. Iron in the direction of the yarn.

Care of Ironing Equipment

The Smoothing Iron

Keep the working surface clean. If starch sticks to it:

1. Disconnect the iron and let it cool.
2. Soften starch with beeswax, then remove with soapsuds or a mild scouring powder.
3. Rinse with a damp cloth; dry.
4. Be careful not to get any water in the electrical connection.

The Ironer

1. Remove starch from the shoe, as above.
2. If the padding becomes packed down and hard, remove it and shake well. Replace when necessary.
3. Replace the cover when it becomes scorched or worn.
4. Follow the manufacturer's directions for oiling.
5. Cover between uses to protect from dust.

CHAPTER XXIII

SPECIAL LAUNDERING PROBLEMS

Types of Rayons

About twenty-five years ago the first man-made fiber for textiles took its bow in the world of fashion, and assumed its place beside cotton, wool, silk and flax. That fiber is now known as *rayon* and is so versatile that it may be woven into a bewildering variety of fabrics.

"Rayon" is a generic term used for all fabrics made from fiber which has a cellulose base. But not all rayon fabrics are the same, and proper care depends on knowing which type of rayon you are handling. The type, in turn, depends on which manufacturing process is used in making the fiber. Three such processes are used in this country:

Viscose
Acetate
Cuprammonium

Viscose rayon accounts for the greatest volume of rayon made in the United States. This type loses some of its strength when wet. White fabric made with viscose rayon does not yellow with age, laundering or dry cleaning. Washable viscose rayon fabrics are washed like silk (page 282) and ironed on the wrong side with a warm, not hot, iron.

Acetate rayon loses some of its strength when wet. It is washed like silk (page 282) or it may be dry cleaned successfully. White fabrics remain white if carefully laundered. Certain reagents for removing spots and stains dissolve this fiber (page 315). The fibers melt before they scorch, and particular care must be taken to use an iron that is barely warm and to iron the fabric on the wrong side. Acetone, the base of some nail polishes, dissolves acetate rayon.

Cuprammonium rayon is almost the same as viscose rayon and requires similar care. The filaments are finer than those made by other rayon processes and can be spun into finer, stronger yarns. White fabric will not yellow with age, laundering or dry cleaning.

Spun rayon, contrary to general thinking, is not a type of rayon, but may be made from any type. Long rayon filaments are cut into staple lengths similar to cotton, wool, spun silk and linen. The filaments are then spun into yarn with the spinning systems used for cotton, wool

or other fibers, so that fabrics woven from them resemble fabrics woven from natural fibers. Spun rayon combines readily with the natural fibers for still greater variety.

Laundering Silks and Rayons

Silk and rayon are fine fabrics and deserve fine care. If you treat them properly their life expectancy will be increased and their beauty maintained. Temperature of water for washing and rinsing and of the iron must be watched carefully—silks and rayons resent too much heat and react to it badly. Keep any washing instructions that come with a garment and follow them carefully.

The washability of any rayon fabric depends on the nature of the weave rather than on the fiber content. Rough or creped surfaces and novelty textures usually should be dry cleaned. If they are washed, take measurements before laundering, as a guide to easing the material to its original shape and size during ironing. *Informative labels, used by reputable manufacturers of rayon fabrics, are your best guides as to washability or dry-cleanability.* Therefore it is safest to buy only labelled fabrics and garments.

Washing by Hand

Often there are not enough silk or rayon garments to make up a load for the washer, and it is quite customary to launder them by hand:

1. Remove any buckles, buttons, sleeve pads, trimmings or ornaments that might cause stains.
2. Wash separately each garment that is not fast-colored, that is new, or that is dyed with more than one color.
3. Use lukewarm water* (95–100° F.), softened if necessary (page 256).
4. Make a suds with mild soap.
5. Squeeze the garments gently *under water* until they are clean. Rayon fibers weaken when wet and must be handled gently. Never rub silks or rayons when you wash them.
6. Squeeze out suds, do not twist or wring.
7. Rinse at least three times in lukewarm water (95° F.), softened if necessary (page 256), and squeeze out water after each rinsing.

Washing by Machine

1. Use lukewarm suds made with mild soap, as above.

*Water that feels neither warm nor cold when tested with the elbow.

2. Run the washer 3–5 minutes, *not longer.*
3. Extract wash water in a spinner or separate extractor or with a wringer.
4. Rinse twice, running the washer 2 minutes each time and extracting the water after each rinse.

Drying

Roll garments in turkish towels to remove excess moisture, then unroll immediately and iron when ready. Many garments can be ironed immediately after unrolling. It is safer to allow prints and spun rayons to dry until barely damp, before ironing. Lingerie may be dried and evenly sprinkled if this is more convenient.

Fabrics with Special Finishes

The story of new finishes that are applied to textiles of all types, to make them crease-resistant, water-repellent, etc., is fairly recent history in the world of fabrics.

Claims that are on the side of extravagance are made for some of these finishes, and unlabelled fabrics are pigs in pokes as far as their wearability and cleanability are concerned.

Fortunately many manufacturers produce fabrics and apply finishes of which they may be proud, and they are quick to label them clearly and to guarantee all the claims they make. It is, therefore, up to you to look for such labels, read every word that is printed on them, and file them away for future reference in case of any dissatisfaction after purchase.

Crease-Resistant Finish

Several finishing processes for fabrics of spun rayon, linen, silk, cotton or a mixture of these fibers, are claimed to make the fabrics crease-resistant. Some of these claims are extravagant but you will find that reliable companies do not claim that the fabrics will not crease (if this were true, the fabric could not be pressed or pleated), but that they *resist and recover from creasing.* For example, wrinkles from packing or wearing will shake out after the garment has been left on a hanger overnight. A good crease-resistant finish improves wearing qualities, imparts "body," makes the fabric resistant to yarn slippage at the seams, decreases shrinkage and will withstand laundering or dry cleaning. To wash fabrics treated for crease-resistance in this way, follow directions for washing silk, page 282. Iron according to fibers used in fabric (page 273).

It is possible now to buy velvet which is crush-resistant. Wrinkles disappear with overnight hanging, and frequent costly steaming is unnecessary. Dry cleaning will not affect this finish.

Water-Repellent Finish

Water-repellent finishes for fabrics, furs, etc., make them proof against moisture and spotting from liquids. Many such finishes are removed wholly or partly by laundering or dry cleaning, but it is possible to have the garment retreated. At least one such finishing process for cotton, rayon and silk will last through repeated launderings and dry cleanings. The label on garments so treated identifies the fabric and gives the name of the unbiased testing laboratory which has checked the claims. It may be a trifle confusing to think of a water-repellent fabric that can be laundered! However, the fabric will allow passage of water if slight pressure is applied, as it is in washing. This finish does not impair the appearance, color or draping quality of the fabric, and preserves its original freshness.

Another finish which is really water-proof, rather than water-repellent, is a coating made from coke, limestone and salt. It is somewhat shiny when applied to fabrics. Curtain, drapery and upholstery fabrics, tablecloths, shower curtains, luggage covers, raincoats and even lampshades which have this finish are now available.

"Pre-Shrunk" Finish

"Allowing for shrinkage" when buying yard goods or ready-made garments was a long-endured nuisance which is no longer necessary. Now we can use patterns of correct size or buy garments that fit *if* we look for labels and read them with a wary eye. The term "pre-shrunk" does not give us enough information. The finishing process may have shrunk the material considerably, but there may be enough residual shrinkage left to impair the fit of the garment after laundering. So look for a statement as to the percentage of shrinkage that must be expected. The label should read "Pre-shrunk. Residual shrinkage will not exceed — per cent when tested in accordance with recognized and approved standards or tests." Residual shrinkage of 2 per cent is almost negligible. One fine preshrinking process leaves only 1 per cent residual shrinkage according to Government standards. *Cotton, linen* and *spun rayon* fabrics are shrunk by this process. The fabric is made stronger and its wearing quality is improved when it is finished in this way. Color and softness are not impaired. Yard goods and garments carry an informative label.

A new chemical treatment, applied to fabrics made of *viscose rayons,* overcomes both shrinkage and stretching. After this treatment, the fabrics will not shrink or stretch within a strict tolerance when tested by a washing and pressing test which is more severe than most current washing tests for rayons. Rayon fabrics treated in this way carry a label which identifies them to the buyer.

Woolen materials can be pre-shrunk also, with no loss of softness or durability.

The Texturity Guild is an organization of refinishers of woolen fabrics. Any manufacturer of woolen garments or yard goods may send his cloth to a member of the Guild for shrinking and refinishing according to directions issued by the Guild. A constant check on the member's work is made by the Guild. Each member issues a tag with each 3¼ yards of refinished cloth, stating that the material has been pre-shrunk and will not shrink more than 2 per cent with dry cleaning, pressing, etc. This tag is keyed so that it is possible to find out which refinisher treated the fabric. Save this tag, in case any adjustment is necessary.

If you buy woolen material that has not been pre-shrunk, a reliable dry cleaning establishment (page 309) will shrink it for you. Or perhaps the store which sells it offers a sponging and pressing service which results in shrinkage.

Permanent Finish

Permanent sizing of cotton materials does away with the necessity for starching, as fabrics finished in this way by reliable companies retain their crispness through several washings. The stiffness and permanence of the finish vary according to the process. Many fabrics retain their original stiffness throughout their lifetime. Sheer cottons, such as organdy, batiste, voile and marquisette, as well as heavier cottons such as shirting materials, are finished in this way. Ordinary care in laundering, according to the type of fabric, is all that is necessary.

One type of curtain material which is sold by the yard, or made up in several styles, is claimed not to need starching, stretching or ironing during the life of the curtain. Residual lengthwise shrinkage will not exceed 2 per cent. The labels on these curtains give laundering directions and the name of the unbiased laboratory that checked all claims.

There is a glazed chintz on the market with a finish which will withstand several launderings or dry cleanings, although it cannot be called "permanent." Washing directions are given on the label. Shrinkage will not exceed 2 per cent.

Air-Cooled Finish

Another new finishing process for fabrics increases porosity, or ventilation, because lint does not close the interstices between threads after laundering. Thus rapid evaporation of perspiration is possible and wearing comfort is increased, particularly in warm, humid weather. Labels and tags on garments and fabrics identify this finishing process for the consumer.

Elastic Yarn

A patented yarn made of ordinary textile fibers, but having a tiny elastic filament in its core, is woven or knitted into fabrics like any other yarn and made into a variety of garments. Wearing apparel made of these fabrics will stretch with any movement of the body, but will return to its original shape. This elasticity makes it easier to buy a garment of correct size and eliminates the need for many alterations. The wearing quality of garments made with this yarn is good because friction and strain are eliminated. The elastic core is not rubber, and therefore is *not affected by ironing or dry cleaning.* Ordinary care in laundering will insure long life.

Specialty Fabrics

Seersucker, as it is manufactured today, is a far cry from the crudely crinkled fabric it once was. It is now made in a bewildering variety of colors and patterns, and seersucker dresses are a real joy in the summertime because they do not need to be ironed.

Wash seersucker as you would any cotton material (for white, see page 261, for colors, see page 287).

After the last rinse water is extracted, pad the shoulders and sleeves with paper towelling or white tissue paper and place on a rust-proof hanger. Pull the hem, seams and belt straight and let dry thoroughly.

Trimmings of other material may be pressed if necessary.

Organdy should be washed as silk fabrics are (page 282). If it does not have a permanent finish, its appearance is improved by light starching (page 266). Iron with a moderate iron while still fairly wet.

Silk or Rayon Shantung, or Linenlike Fabrics are laundered like all silk or rayon fabrics (page 282). However, they should be almost dry when ironed. Iron first on the wrong side, then on the right side, with a layer of cheesecloth between fabric and iron. On page 279 are directions for ironing silk and rayon fabrics.

Sharkskin is washed in the same way as silk (page 282). Iron before it is quite dry, on the wrong side, using a barely warm iron.

Colored or Printed Cottons and Linens

Test for color fastness to washing unless these materials are so labelled. To make this test, immerse an end of the belt or some other inconspicuous part of the garment in a bowl of clear hot water, and let it soak a few seconds. Then squeeze it out. If the water is tinted, follow directions for washing garments of fugitive color (below).

Never soak colored or printed materials that are of doubtful color fastness. Colorfast cottons and linens may be soaked for as long as 20 minutes. Two short washing periods for very soiled colored garments are better than soaking and washing.

Washing by Hand

1. Use lukewarm water (95–100° F.), softened if necessary (page 256).
2. Make suds with mild soap.
3. Work quickly, squeezing the suds through and through. Avoid rubbing.
4. Squeeze out wash water; do not wring or twist.
5. Rinse several times in water of the same temperature, squeezing out the water after each rinse.

Washing by Machine

1. Use lukewarm water and mild soap as suggested above.
2. Run the washer 5–7 minutes, according to the degree of soil.
3. Extract wash water with wringer or spinner.
4. Rinse twice in water of the same temperature. Run the machine two minutes for each rinse and extract the water after each rinse.

Drying

Hang the garments outdoors in the shade or indoors, never in direct sunlight.

Fugitive Colors

If a test (above) shows that colors are not fast, washing results cannot be guaranteed. Salt has no value in "setting" colors—in fact

there is no method that can be counted on to set colors that are fugitive. You can, however, take the following precautions in laundering:

1. Never soak.
2. Wash each article separately.
3. Use cool suds (85–90° F.).
4. Wash and rinse as rapidly as possible.
5. Have final rinse water practically cold.
6. Place turkish towel inside garment, roll in another turkish towel.
7. Unroll at once and hang in the shade or indoors to dry.
8. Let garment become almost dry before attempting to iron.

Velvets, Velveteens and Corduroy

Some velvets are now actually washable, but don't take a chance unless they are so labelled and guaranteed. Many velveteens and most cotton corduroys can be washed satisfactorily if the colors are known to be fast, and if the material does not contain too much dressing.

Use lukewarm water (95–100° F.), softened if necessary (page 256), and make a thick suds with mild soap.

Washing by Hand

1. Plunge the garment up and down in the suds. Do not rub it or crumple it in your hands. Use a soft brush on stubborn soiled spots.
2. Squeeze out wash water gently; never wring or twist.
3. Rinse several times in lukewarm water (95–100° F.) to remove all traces of soap and soil. Squeeze out water after each rinse.

Washing by Machine

1. Make suds as directed above. Run the machine 5 minutes. If the garment is still soiled, extract the suds and wash 2 minutes in fresh suds.
2. Rinse two or three times in lukewarm water (95–100° F.), extracting the water after each rinse. If you use a wringer, loosen the tension on the rolls. If you use a spinner, don't let it run long enough to create wrinkles.
3. Roll the garment in a turkish towel and gently press out excess moisture. Shake it thoroughly and ease it gently into its original size and shape.
4. Dry the garment flat on a turkish towel, or if it is made of firm

material so that its own weight won't drag it out of shape, hang it on a carefully padded hanger. Shake occasionally during the drying.

5. When it is thoroughly dry, brush the material in one direction with a soft brush to raise the pile.

Woolen Garments

There are some general rules which apply to the laundering of all woolen garments. Unless these rules are followed, wool will mat, felt and shrink until the damage cannot be repaired.

1. Never soak.
2. Never use hot water. Use lukewarm water (95–100° F.), softened if necessary (page 256).
3. Never use all-purpose laundry soaps. Use mild soap to make a lively suds.
4. Work quickly. If you are washing by hand, squeeze the suds through the garments while keeping them under water. *Never rub.* If you use a washer, do not run it longer than 5 minutes. If the garments are still soiled, wash them again in fresh suds for 2 minutes. Extract wash water.
5. Rinse thoroughly, using water the same temperature as the wash water (95–100° F.) and extracting the water after each rinsing.
6. Never wring or twist. Squeeze water out by hand, or use loosely adjusted wringer, or spin just long enough to extract the water, not enough to cause wrinkles.
7. Roll in turkish towel and knead gently to extract excess moisture.
8. Stretch gently back into shape, using forms or measurements (see below).
9. Dry quickly in the shade or indoors, never in direct sunlight or near any source of artificial heat.

Sweaters and Knitted Garments

These garments should be measured before washing. An easy way is to trace an outline of the garment on clean wrapping paper. Adjustable drying and blocking frames are available, which assure a perfect fit after laundering.

Then wash and rinse according to general directions (above). Support the weight of the wet garment with your hands throughout the washing process, to prevent stretching.

Now gently ease the garment back to its original measurements, pinning it to the paper pattern with rust-proof pins, or fitting it on the frame.

Socks, Stockings, Gloves and Mittens

Turn wrong side out and wash and rinse according to general directions (page 289). Shrinkage is difficult to avoid unless these articles are dried on forms, particularly in the case of socks. For drying, choose a warm place where the air circulates freely, away from direct sunlight or any source of artificial heat.

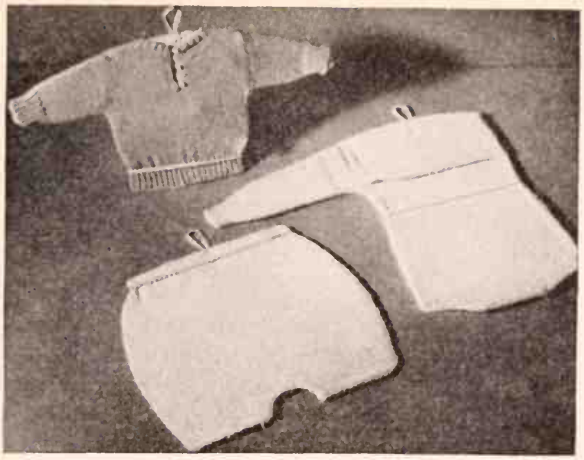
Men's Washable Suits

Men are gradually acquiring better sense about dressing comfortably in warm weather, and cool, washable suits are gaining in popularity with every season.

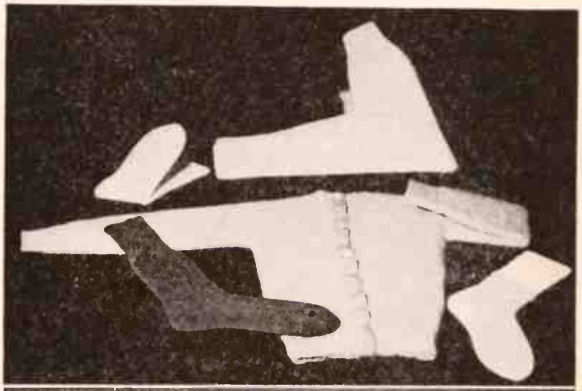
Unless we choose the easy, safe way of sending them to a good commercial laundry (page 306), it is up to us to launder them so professionally that the owner will not be ashamed to wear them and will go back to suffering in a heavy suit.

Of course it is foolhardy and entirely unnecessary nowadays to buy a suit that is not labelled "pre-shrunk" (page 284). Even so, it is best to measure the suit and record the figures before laundering.

1. Measure the sleeve seam from armpit to end of cuff; middle back of coat from collar seam to bottom; inside trouser seam from crotch to bottom of cuff.
2. Remove all spots and stains before washing (page 312). The collar line will probably be quite soiled. If so, scrub it and other soiled areas with a soft brush dipped in thick lather.
3. Turn pockets and cuffs inside out and brush them thoroughly.
4. Soak the suit 5 minutes in a suds made with mild soap and lukewarm water (95–100° F.) which has been softened if necessary (page 256). Extract this water.
5. Make fresh suds as above. If you are using a washer (and we hope you are, for this is hard work without the help of a machine) run it 10–15 minutes. If the suit is badly soiled, wash it twice, running the washer 10 minutes each time, and use fresh suds for the second washing. Extract the wash water.
6. Rinse the suit three times in lukewarm water (95–100° F.), running the washer 5 minutes each time, and extracting the water after each rinsing.



Baby's "woolies" should be dried on frames.



If gloves, socks and sweaters made of wool are dried on frames they keep their original size and shape. Frames covered with terry cloth absorb moisture and protect the garment.

Photographs by William H. Zerbe

7. Stretch the garment gently back to its original measurements.
8. Hang the coat on a well-padded rust-proof hanger and pin it to the hanger at the shoulder with rust-proof pins. Two hangers placed together on the line, with the hooks in opposite directions, won't pull off the line. Trousers are hung by the waistband or on a hanger.
9. Ironing directions are given on page 277.

Foundation Garments

The life and strength of a foundation garment depend on the care you give it. Frequent laundering is essential from the standpoint of personal daintiness and it is also life insurance for the garment.

1. The water should be lukewarm (95–100° F.) and softened if necessary (page 256). Make a rich suds with mild soap.
2. Squeeze the suds through and through the garment. Never rub or twist. If soiled spots remain, use a soft brush on them, don't rub sections of the fabric together to get them out.
3. Squeeze out wash water, handling gently. Rinse several times in lukewarm water, squeezing out water between rinses.
4. Roll the garment in a turkish towel and knead gently to remove excess moisture.
5. Straighten the garment and hang it evenly over a line or rod if it opens all the way down. If it does not, lay it flat on a turkish towel. Stuffing with tissue paper will hasten drying. Do not try to speed drying by placing it in direct sunlight or near a source of artificial heat, such as a radiator; heat and elastic do not agree.
6. When the garment is dry, press the fabric sections and shoulder straps, if not elastic, with a warm iron. *Do not press elastic sections or garters.*

Silk or Rayon Lingerie

Follow directions for laundering silks and rayons (page 282).

Silk or Nylon Stockings

There is probably no need to remind you that perspiration is the deadly enemy of silk stockings, and that washing as soon as possible after each wearing is obligatory if you expect your stockings to last.

1. Remove your rings before you launder stockings, or a thread may catch in a ring and start a run.
2. Use lukewarm water (95–100° F.), softened if necessary (page 256). Make a rich suds with mild soap. Turn the stockings inside out and immerse them in the suds. Never rub soap on stockings and never rub surfaces together. Instead, squeeze the suds gently through the stockings again and again. Extract wash water by squeezing gently.
3. Rinse several times in lukewarm water (95–100° F.) until there is no trace of soap left. Extract water after each rinse by squeezing gently.
4. Stretch the stockings gently into shape and hang, feet down, over a smooth rod to dry, away from heat.

Washable Gloves

Never attempt to wash gloves unless they are stamped "washable" or sold to you as such. If gloves have ever been dry cleaned, even once, do not attempt to wash them.

All washable gloves, no matter of what material, should be laundered frequently, because severe soil makes rubbing necessary, and rubbing injures the finish, affects the dye, and may roughen the surface.

Leather: Many varieties of washable leather gloves are now available. Calfskin, cape, chamois, doeskin, white buckskin, pigskin, goatskin, grain deerskin and mocha or suede (if processed for washability) make up this group.

1. Wash all leather gloves, except chamois and doeskin, on the hands (these two leathers become soft when wet and may tear or rip along the stitching).
2. Use lukewarm water (95–100° F.), softened if necessary (page 256), and make a rich suds of mild soap. Wash your gloved hands in the suds, squeezing and pressing but not rubbing. If there are stubborn spots of soil, use a soft brush on them, gently.
3. When gloves are clean, slip them off gently *from the wrist.* An easy way is to fill the gloves with water while they are on the hands and gently squeeze the top of the glove with a downward motion until the fingers slip off. Wash the inside to remove any soil left by your hands. Turn right side out. Rinse several times in lukewarm water (95–100° F.). Authorities differ concerning the advisability of a light soapy last rinse for chamois and doeskin gloves.

Follow the washing directions that come with your gloves, regarding this point.

4. Pat out excess moisture with a turkish towel. Stretch the gloves lengthwise gently and blow into each glove to puff it out. Lay the shaped gloves flat on a dry turkish towel and let them dry slowly, away from direct sunlight or any source of artificial heat. If cuffs or stitching are in contrasting colors, stuff white tissue paper inside the gloves. When the gloves are almost dry, "finger-press" them gently by stretching the leather in both directions. This makes the glove soft and pliable when dry. If gloves get too stiff as they dry, roll them in a damp towel for a few moments and then manipulate the leather gently while it is damp.
5. Metal glove driers, covered with terry-cloth padding, are a splendid help. The terry cloth absorbs some moisture and the padding keeps the glove soft and shaped to the hand.

Fabric: Wash all fabric gloves off the hands. Immerse them in suds made in the same way as for leather gloves (page 293) and squeeze the suds through the gloves until they are clean. Use a soft brush on stubborn soiled spots.

Rinse thoroughly in clear lukewarm water. Ease into shape and hang evenly over rod or line to dry or lay on flat surface. Never wring or twist.

Lace

Fine pieces of fragile lace should be basted to a piece of firm, sheer, white cotton cloth before laundering. Use the laundering procedure given on page 282 for silks and rayons. Rare old lace should be handled only by experts (page 278).

Small pieces of lace may be put into a mason jar half filled with lukewarm mild soapsuds, covered, and shaken gently until clean. Rinse in the jar in clear lukewarm water, at least three times.

Pat lace into shape and pin carefully to a turkish towel with rustproof pins, to dry.

See page 278 for ironing directions.

Veils

Sprightly veils have a way of drooping in a dispirited fashion if they are caught in a sudden shower. But they respond beautifully to a dip in gum-arabic solution.

To make the gum arabic solution, dissolve 1 tablespoon gum arabic, which you can buy in any drugstore, in 1 cup of hot water. Don't be impatient, because it may take as long as two hours for the gum arabic to dissolve completely, and it must be thoroughly dissolved before the solution is used.

If the veil is soiled, wash and rinse it as you would a piece of lace (page 294). Then dip it in the gum-arabic solution and spread it flat on a towel to dry, keeping the edges straight. When dry press it carefully with a warm iron.

Baby's Wardrobe

Baby's dresses, slips, coats, etc., are washed according to the material of which they are made. You will find directions for washing woolens on page 289, silks and rayons on page 282 and cottons on page 261. Just remember never to use starch on any of the baby's clothes.

Bonnets are also washed according to the material and shaped over a well-padded bowl to dry.

Diapers

Diapers present a most difficult laundry problem. If the budget can strain a point, and it isn't much of a strain at that, find out whether there is a diaper service in your town or city. Such a service provides you with the diapers themselves, and a receptacle for soiled diapers. The soiled diapers are called for, laundered and delivered to you clean.

If you are travelling or visiting with the baby, you will find disposable diapers a welcome help. There are also disposable diaper inserts of soft paper which are inexpensive and which save work.

Diapers are available in several different materials nowadays, and old-fashioned diaper cloth is on the way out. One new type is made of a gauze material which is double woven, porous, light and extra absorbent. The edges are pinked—no hems to irritate or hold stains. These diapers are easy to wash and they dry thoroughly in 10 to 15 minutes, which is a big point in their favor.

Knitted diapers are absorbent, easy to use, and very comfortable for small babies, but they dry so slowly that it is necessary to have a large supply on hand.

No matter which type you choose, proper laundering of diapers is essential to the baby's health and comfort.

You will need a covered enamel or aluminum pail or step-on can, of a 2-gallon capacity. Fill it half full with borax solution made by dissolving 2 tablespoons borax in 1 gallon water.

Drop wet diapers into the solution as soon as they are removed. They should never be dried and reused without washing. Soiled diapers need a preliminary cleansing. Hold the diaper by one corner in the toilet bowl and flush off soil. Then drop it into the solution.

To wash diapers, use hot water, softened if necessary (page 256) and make a lively suds with mild soap. When the diapers are clean, extract the wash water.

Thorough rinsing is all-important. Use water as hot as possible and rinse *at least* three times. Be absolutely certain no soap is left in the diapers. Diaper rash may occur if the diapers are not properly rinsed.

A washing machine is splendid for washing diapers because it is possible to use hotter water than hands can bear. Run the machine 10 minutes for the washing process; extract the wash water and rinse three times in very hot water, running the machine 2 minutes for each rinse, and extracting the water each time.

Boiling Diapers—If diapers are dried in the sun, or with a sun lamp, they need not be boiled each time they are washed—twice a week is enough. (It may be that in the near future light bulbs that kill bacteria may be recommended for drying diapers as well as the rest of baby's wardrobe!) If they are dried indoors, they must be boiled each time.

Wring the diapers out of the wash water. Then dissolve enough soap to make a light suds and boil the diapers 10 minutes after the suds come to a boil. Rinse *at least* three times after boiling.

Some baby doctors recommend a boric acid rinse in special cases. After the diapers are dried they are dipped in a solution made by dissolving ¼ cup boric acid in 2 quarts of hot water, and dried again.

Never iron diapers—it makes them less absorbent and it is a waste of time. When they are thoroughly dry, smooth them out and fold.

Crib Sheets and Pads

There may be several crib sheets and pads used every day for the first few months, and these are much too heavy for the new mother to wash by hand. If she does not own a washer, it may be good economy to buy one, because the supply of sheets and pads may not be large enough to allow her to send them to the laundry.

Turkish Towels

New bath towels should be laundered before they are used, to make them absorbent. Each subsequent laundering increases absorbency.

Do not let turkish towels become too soiled, because severe scrubbing shortens their life.

All terry towels shrink a little when laundered. Therefore, it is important to select towels that are big enough so that this shrinkage will not affect their usefulness.

Never iron turkish towels. When they are dry, shake them vigorously, fold and put away.

Infected Handkerchiefs

In this day and age, the problem of infected handkerchiefs should be non-existent. Soft white or delicately colored tissues that can be thrown away after use are cheap enough so that nearly every sufferer of a common cold or sinusitis may use them freely. Cloth handkerchiefs are becoming more ornamental in their function every day, and we may count this fact among our blessings.

However, if the problem does exist, here is the way to treat it:

1. Soak the handkerchiefs in a salt solution for half an hour, then rinse in clear cold water.
2. Launder in hot suds; wring out. Bring fresh suds to a boil and boil the handkerchiefs 10 minutes. Rinse several times in hot water.
3. Hang in the sun to dry if possible.

Mattress Pads

Mattress pads should be washed with fair frequency. If stained, soak the pad in cool water for half an hour. Extract this water by wringing or spinning.

Washing by Hand

1. Use warm water (100–110° F.), softened if necessary (page 256).
2. Make a rich suds.
3. Plunge the pad up and down in the suds or use a hand plunger. Scrub soiled spots with a soft brush and thick suds.
4. Extract wash water.

   If the pad is quite soiled wash it again in suds of higher temperature, and extract this water.
5. Rinse three times in clear warm water, softened if necessary (page 256), extracting the water after each rinse.

Washing by Machine

1. Make a rich suds as directed above.
2. Run the washer 10 minutes.
3. Extract wash water.
   If the pad is still soiled wash it again in fresh suds, running the machine 5 minutes; extract wash water.
4. Rinse twice in clear warm water, running the machine 3 minutes for each rinse and extracting the water each time.

Drying

Dry out of doors if possible. Hang the pad evenly over the line for one third of its length and pin securely. Mattress pads should not be ironed.

Blankets

Time was when blankets were just heavy bed coverings for extra warmth, and little attention was given to their looks. Now, when we walk through the blanket department of any good store, our breath is fairly taken away by a riot of color and a feeling of real luxury. So many different types of blankets to choose from—deeply napped and fluffy, yet almost feather-light for winter comfort—soft, light-weight, almost sheer blankets for cool summer nights—each one available in such a wide range of lovely colors that it is no trouble at all to find just the right one for the bedroom.color scheme. Deep bindings of washable silk or rayon add the final luxurious touch that makes modern blankets so irresistible.

Once we have made our choice it is up to us to see that the blankets we buy retain their original size, fluffiness and rich color for many years. If you send your blankets out for cleaning, choose the laundry or dry-cleaning establishment thoughtfully (page 306). If you launder them at home, remember that wool fiber is sensitive when wet, and work quickly but gently.

A warm spring or fall day, when there is a breeze stirring, is ideal for washing blankets. Never wash them on a hot sticky day, or when there is a high wind, or when the temperature hovers around the freezing point. Blankets shrink and roughen in cold weather, a severe wind is hard on wet wool fibers, and humidity prevents the rapid drying that is so important.

Never try to wash more than one blanket at a time. First shake it thoroughly to remove all loose dust. Then examine the binding. If it

is quite soiled, lay the blanket on a smooth, clean working surface and scrub the binding gently with a soft brush dipped in thick lather made with mild soap. Use this same treatment for any particularly soiled spots on the blanket itself.

The water must be lukewarm (95–100° F.) and softened if necessary (page 256). Make a rich suds with mild soap and be certain that the soap is completely dissolved.

The same procedure is followed whether the blanket is all wool, part wool, cotton, or rayon and wool.

Washing by Hand—Washing blankets by hand is hard work and involves heavy lifting, but it can be done. Wash only one blanket at a time and dip it up and down in the suds and avoid all rubbing. If the blanket is quite soiled, wash it in two or three fresh suds baths. Add more soap if suds die down. Extract the water after each bath by squeezing gently—never twist or wring the blanket.

Rinse two or three times in lukewarm water (95–100° F.), extracting the water after each rinse. It is a good idea to use a reliable moth-proofing compound in the last rinse water (page 371), following directions on the package.

Washing by Machine

1. Fill the washer with lukewarm water (95–100° F.), softened if necessary (page 256).
2. Make a 3-inch suds, using mild soap.
3. Run the washer 2–4 minutes.
   If the blanket does not look perfectly clean, extract the water and wash it again for 2 minutes in fresh suds.
4. Rinse two or three times, running the washer 2 minutes each time, and extracting the water after each rinse. If you use a wringer, loosen the tension on the rolls as completely as possible. If you use a spinner, run it just long enough to extract the water. If you run the spinner too long it will create wrinkles in the blanket. A reliable moth-proofing compound may be used in the last rinse water, following directions on the package (page 371).

Drying—Cover the clothesline with an old clean sheet, even though you are sure the line is clean. Hang the blanket lengthwise over the line, with its weight evenly distributed on each side and with any stripes hanging vertically. Two lines, spaced one or two feet apart, will hasten the drying. Do not hang the blanket in direct sunlight. Never

use clothespins. Shake the blanket and gently press out water that has accumulated at the bottom. Straighten the borders and keep the edges straight. When the blanket has partially dried, shake it gently and reverse it on the line.

If the blanket is dried indoors, keep it away from any source of artificial heat.

When the blanket is thoroughly dry, use a soft brush to fluff up the nap, brushing against the "up and down" of the nap.

Press the binding with a warm iron, with a double thickness of dry cheesecloth between the binding and the iron.

Bedspreads

From the practical standpoint, it is best to buy bedspreads that are guaranteed washable, as they should be laundered frequently.

Washing by hand is heavy work and unnecessary if there is a good professional laundry in your vicinity. If you decide to launder them at home, whether by hand or in a washer, follow directions for blankets (page 298).

Chenille and candlewick spreads should not be ironed. Shake them several times during drying and brush lightly with a clean whisk broom when they are thoroughly dry.

Silk or rayon bedspreads may be dry cleaned or laundered according to the directions for all silks and rayons (page 282). Pressing is done with a warm iron.

Comforters

No matter by what name you call them—comforts, comforters or puffs—these luxurious and beautiful warmth-givers, filled with down, feathers or wool, present a cleaning problem. *Do not attempt to wash them.* Dry cleaning is the only method recommended by manufacturers and retailers alike.

Quilts

Flat, well-stitched cotton quilts may be laundered, as there will be very little shifting of the filling. However, a good professional laundry is undoubtedly better equipped to do the job than you are, because even a thin cotton quilt is heavy and hard to handle when it is wet.

Be sure colors are fast to washing, then follow directions for washing blankets (page 298). Ironing is not necessary if the quilt is carefully handled in washing.

Slip Covers

Slip covers may be laundered at home if you are sure that the fabric is washable, pre-shrunk (page 284) and colorfast to washing. If you are at all uncertain, it will be far less expensive in the long run to send them to a reliable dry-cleaning establishment. Glazed chintz without a permanent finish must be sent to a dry-cleaning establishment that is equipped to do re-glazing.

Before you launder them, shake them thoroughly and brush along the piping to remove all loose dirt and dust.

Washing by Hand

1. Use lukewarm water (95–100° F.), softened if necessary (page 256).
2. Make a heavy suds with mild soap.
3. Plunge the slip covers up and down in the suds until clean, making fresh suds if necessary. Do not rub, wring or twist.
4. Squeeze out the wash water.
5. Rinse three times in lukewarm water (95–100° F.), softened if necessary (page 256), squeezing out the water after each rinsing.

Washing by Machine

1. Make lukewarm suds as suggested above.
2. Run the washer 5 minutes.
   If still soiled, wash 2 minutes in fresh suds.
3. Extract the wash water.
4. Rinse twice in lukewarm water (95–100° F.), running the washer 2 minutes and extracting the water after each rinsing. If a wringer is used, loosen the tension. If a spinner is used, run it for a few seconds—not long enough to create wrinkles.

Drying

Dry indoors or in the shade, never in direct sunlight or near a source of artificial heat.

If the slip covers are to be stored, put them away smoothly folded but unironed.

Curtains

Direct sunlight, certain gases present in the air, weathering and wear weaken the fibers of which curtains are made, no matter how expensive

the curtains, and so they must be handled carefully throughout the laundering process.

Shake them gently to remove as much loose dust as possible.

Silk and Rayon Curtains

Be certain that the curtains are colorfast to washing. If possible, wash and iron a measured sample to see whether the fabric loses too much body or shrinks excessively. If not, follow directions on pages 279 and 282 for washing and ironing these fabrics. Remember that rayon fibers are weaker when wet than dry.

Tailored sheer rayon curtains, made in seven lengths, of fast-colored, delustered material which will wash without appreciable shrinkage, are fairly new on the market. Laundering directions are given on the label, and claims have been checked by an unbiased testing laboratory.

Cotton Curtains—Soak the curtains in clear cool water (85–90° F.) 10–15 minutes to remove loose dirt. Repeat if necessary.

Washing by Hand

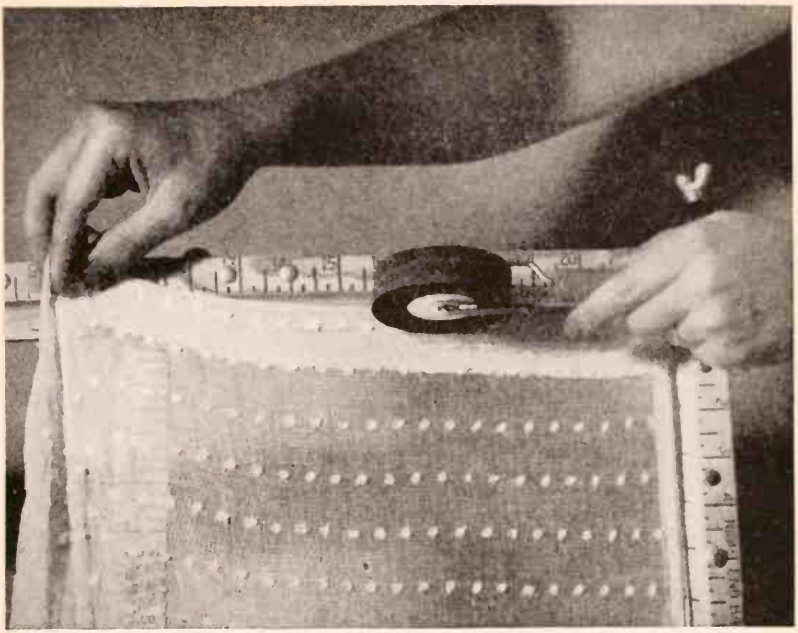
1. Use lukewarm water (95–100° F.), softened if necessary (page 256).
2. Make an extra heavy suds with mild soap. This suds loosens dirt and floats it out, so that rubbing is unnecessary.
3. Squeeze the suds gently through the fabric until it is clean.
4. Squeeze out wash water. Never wring or twist.
5. Rinse three times in lukewarm water, extracting the water after each rinsing.

Washing by Machine

1. Use lukewarm water, softened if necessary (page 256), and make a heavy suds with mild soap.
2. Run the washer 3–5 minutes.

   If the curtains are still soiled, wash them again in fresh suds for 2 minutes.
3. Extract wash water.
4. Rinse three times in lukewarm water, allowing 2 minutes for each rinse, and extracting the water each time.

Drying—Use curtain stretchers to dry straight curtains, if possible, unless they are made of rayon. If you do not have stretchers, hang the curtains evenly over the clothesline, and straighten the edges carefully.



Photograph by William H. Zerbe

A curtain frame with ruler-like markings makes it easy to stretch curtains to their original measurements. The sponge rubber roller is an added convenience.

Short glass curtains may be dried one at a time in this fashion: hang the curtain on the rod at the window, run a heavy, smooth, rust-proof rod through the bottom hem, to pull the curtain straight and hold it taut as it dries.

Sheer curtains may need a light starching (page 266).

Ironing directions will be found on page 275.

Draperies

Silk and Rayon draperies fare better if they are sent to a reliable dry-cleaning establishment, although they can be laundered if both fabric and lining are pre-shrunk (page 284), if colors are fast and if every care is taken. Follow directions for washing silks and rayons (page 282) and work quickly.

Cotton and Linen, such as voile, cretonne, unglazed chintz or "permanent-finish" glazed chintz (page 285) may be laundered at home if the

fabric is pre-shrunk and colorfast to washing. Glazed chintz without a permanent finish must be sent to a dry-cleaning establishment that is equipped to do re-glazing.

Shake the draperies to remove all loose dust and dirt. Launder as for colored or printed cottons and linens (page 287).

Washable Rugs

(*Braided mats, cotton chenille mats, string rugs, woven-rag rugs, etc.*)

If possible, let a good professional laundry (page 306) wash rugs for you, because it is hard work even with a washing machine. Do not attempt to launder sizable rugs by hand. Be sure colors are fast to washing. Remove all loose dust and dirt with a broom or vacuum cleaner.

Washing by Machine

1. Soak in clear lukewarm water (95–100° F.) 10 minutes to loosen embedded soil.
2. Use lukewarm water (95–100° F.), softened if necessary (page 256), and mild soap to make heavy suds. Run the washer 5 minutes. Extract wash water. Repeat, using fresh suds each time, until suds remain clean.
3. Rinse three times in lukewarm water (95–100° F.), running the washer 2 minutes each time and extracting the water after each rinsing.
4. Hang over the line in the shade or indoors to dry. Squeeze out water that accumulates at the edge. Turn several times.
5. Brush pile rugs with a whisk broom when they are completely dry, brushing in one direction to restore the pile.

Washing by Hand

1. Soak 10 minutes in lukewarm suds.
2. Change to fresh lukewarm suds.
3. Scrub all over with a brush.
4. Roll up rug, extracting water as you roll.
5. Rinse until all soap is removed, rolling to extract water each time.
6. See points 4 and 5 under "Washing by Machine" (above).

Directions for *shampooing* small non-washable rugs are given on page 176.

Tinting and Dyeing

If you read the manufacturer's directions carefully, and follow them exactly, you can obtain excellent results with fabric tints and dyes.

Select the correct dye for the type of fabric to be dyed. Read the label carefully.

Remove all buttons and trimmings from a garment that is to be dyed. Rip out hems, press out pleats and remove linings, or the dye will not penetrate evenly. Remove spots and stains and wash and rinse the garment or fabric thoroughly.

Use plenty of water, softened if necessary (page 256), for the dye bath. When the garment is in the dye bath keep it in constant motion by stirring, and be sure it is completely immersed all the time.

Tints are not permanent, dyes are. Remember this point when you are deciding which to use.

CHAPTER XXIV

PROFESSIONAL LAUNDERING AND DRY CLEANING

The Modern Power Laundry

Modern laundries offer a wide variety of services, which are priced according to the amount and type of work to be done. If you have an exquisite tablecloth worth several hundred dollars that needs to be laundered, the laundry will give it special care and return it to you looking like new. But this special care demands a special price. If you wish to have the family laundry washed and returned to you unironed, the laundry will do this too, at a modest price. In between these two services are several others at in-between prices. Among them you will surely find one which suits your needs and your purse.

There are several ways to judge a laundry and its services:

1. How do the trucks and drivers look? The laundry's business is cleanliness. A modern, well-run laundry takes pride in having its trucks well painted and in good repair. As the laundry's public relations man, the driver for a good laundry is neatly dressed, usually in uniform.
2. Is the driver well informed? He should be able to explain the various services his company offers, and tell you how your wash is taken care of at the laundry.
3. Is the laundry licensed? Find out whether your town or city issues a municipal license to legally operated laundries. If so, your laundry should be licensed.
4. What is the financial condition of the laundry and how long has it been in business? A laundry with a good financial rating and one that has been in business a long time must have a record of satisfied customers.

After selecting a laundry, do a little additional checking:

1. Look at the tag on the returned bundle. It should state:
   a. The weight in flatwork and in wearing apparel.
   b. Additional charges for excess weight or special finish.

c. The total amount of the bill, machine-stamped in indelible ink or punched on a numbered check to preclude alteration.

2. Look over the returned bundle carefully.
   Flatwork should be stacked in packing so that heavy articles are on the bottom and finer ones on top.

3. Look at the markings.
   a. Pins and clips should not be attached to silk or rayon articles.
   b. Disfiguring marks should not appear on handkerchiefs, doilies, luncheon mats, napkins, linen towels, etc.

4. Inquire about end-of-week prices.
   Some laundries offer a special price for the same service, during the latter part of the week, in order to spread the work more evenly throughout the week and avoid an overheavy load on Mondays.

If you still have any secret uneasiness about the fate of your clothes in a modern professional laundry, why not visit one and see for yourself what happens?

Each bundle is carefully sorted. Articles go into as many as a dozen separate lots according to the special washing processes they require. Colors are classified as light, dark, or of doubtful fastness to washing. Each lot is then put in its own bin.

Many laundries identify work by means of slotted pin arrangements which close the nets in which the work is laundered. No mark is made on the articles. Temporary methods of identification like the slotted pins are now more commonly used than the older method of marking each piece.

In many high-quality laundries, detailed directions for every operation are pasted where they can be seen plainly by employees. These directions are followed exactly for sorting, identification, washing, rinsing, water extraction, ironing, packaging and delivering. Water is used lavishly to assure thorough washing and rinsing operations. As many as five changes of suds and four or five rinses are used. Soaps and reagents are carefully selected for quality and skillfully used.

Good laundering begins with good buying, which is your responsibility. Always be certain that you are getting fast colors and pre-shrunk materials (page 284) when you buy "washables." Ask to see labels that give you this assurance. The American Institute of Laundering extends a helping hand in this direction. They have created the Laundry-Tested and Approved Seal as a guide to buying washable merchandise that is *really* washable. This seal is awarded only to articles that conform to rigid standards concerning quality of cloth, color fastness of

fabrics, trimmings, threads and buttons, shrinkage tolerance, construction and satisfactory launderability. In order to retain this seal, merchandise must submit to monthly testing and consistently measure up to standards. Thus this seal benefits the manufacturer and the laundry as well as you, the consumer.

The cost of your laundry bundle depends on two things—weight and finish. Most fine laundries offer as many as seven different services. You should know how these services differ, and decide which one you want and can afford.

1. *Damp or wet wash service*—clothes are washed, damp-dried, packed in a bag and delivered.
2. *Damp and flat service*—same as 1, above, except that flat work is ironed and bath towels tumbler-dried* to preserve their fluffiness.
3. *Fluff dry service*—flat work ironed; towels tumbled; hosiery and handkerchiefs finished; wearing apparel starched, if desired, and returned fluff-dried.
4. *Economy service*—flat work, hose and handkerchiefs finished, wearing apparel finished on machine presses.
5. *Special finish service*—flat work, hose and handkerchiefs finished; wearing apparel pressed, inspected and touched up by hand.
6. *De luxe or hand finish service*—flat work, hose and handkerchiefs finished; wearing apparel pressed, given minute and careful inspection and hand finishing.
7. *Custom finish service*—each article handled separately, according to its special needs; careful pleating, pressing and hand wrapping. This service is expensive and is recommended especially for individual articles of special value, such as a beautiful open-work tablecloth or fine embroidery.

Of course the well-run laundry offers other special services, such as the laundering of blankets, curtains, etc., about which you should know. *Curtains,* for example, are carefully measured before washing. After washing they are stretched to the original measurements on adjustable steel frames which leave no pinholes to mar the edges. The curtains are then dried in a current of warm air. *Blankets* are gently washed in lukewarm suds, thoroughly rinsed, dried in air of moderate temperature and brought back to their original fluffiness by means of soft rotating brushes which restore the nap. *Diaper service* is discussed on page 295. The driver can undoubtedly supply you with a leaflet describing these

*Tumbler-drying is done in a revolving cylinder which is heated with warm air.

services as well as others in detail. Always ask to have *turkish towels* fluff-dried. There is no extra charge, but unless you ask, the laundry may put the towels through the "mangle" which affects both appearance and absorbency.

Choose the service that fits your own needs and your pocketbook. Don't expect to have fine articles hand finished if you choose the economy service. *If the bundle contains articles that require careful handling, list them separately and tell the driver about them.*

Mutual cooperation between the laundry and the homemaker will insure satisfaction in return for money spent.

The Modern Dry-Cleaning Plant

On the chance that we have not been emphatic enough in urging you never to attempt to do a dry-cleaning job at home, indoors or out (see page 90), we welcome another opportunity to reiterate the warning. You risk your life with flammable solvents, and you risk toxic effects with non-flammable solvents used in large quantities. And, less important to be sure, you cannot do a really good job.

Nothing builds up morale like the assurance of good grooming that clean, well-pressed garments can give. And in addition to this psychological effect, we know that clean clothes give longer wear, because soiled fabrics deteriorate much faster than clean ones.

Non-washable fabrics are cleaned with solvents instead of water. The term "dry cleaning" is used because solvents are volatile and evaporate with great rapidity. If dry cleaning is properly done, a garment is just as clean as it would be after a soap and water washing.

The words "properly done" should carry great weight with you. Perhaps you have often wondered why such a wide price range for dry cleaning exists among establishments in your neighborhood. Reliable cleaners who do a good cleaning job put garments through many processes before they consider them properly cleaned. The care given dictates the price that is charged. In order to cut prices, corners in processes must be cut also. One point of difference is the condition of the solvent. Reliable cleaners filter and distill the solvent to make it clear and clean. A second point is skilled spot and stain removal by experts, and a third point is careful finishing.

There is one sure way to locate a reliable dry-cleaning service. Members of the National Association of Dyers and Cleaners have adopted a standard dry-cleaning process set up by the Association. There is undoubtedly a cleaner in your vicinity who is a member of this Association.

If you followed your dress to one of these modern plants, and watched it from the moment it entered until it was packed fresh and clean to be returned to you, you would see it through all the following processes:

1. A careful preliminary inspection. The marker attaches an identifying tag which remains on the garment until it is ready to be packaged. Special instructions are recorded. Rips are noted and buttons or ornaments removed and placed in a bag, to be replaced later. The garment is carefully examined for stained areas and worn or weakened fabric. Belts and fur trimmings are examined to determine the correct method of cleaning. Pockets are examined. The garment is classified according to fabric. Any unusual condition is then discussed with the customer, perhaps by telephone, before the garment is cleaned.
2. Treatment with special detergents to remove heavy stains.
3. A bath in clean, clear solvent to remove all loose soil.
4. A bath in fresh solvent containing a special soap, during which the garment is gently agitated as it would be in a washing machine.
5. A thorough rinse in clear clean solvent.
6. A whirl in a centrifugal drier to remove excess moisture, followed by drying in a current of warm air.
7. A trip to the spotting room, where stubborn stains requiring special treatment are removed by experts. Special reagents which will not injure fibers or remove color are used on each stain. Each spot is a different problem and requires expert technical knowledge concerning the use of 50–100 different solvents on various kinds of spots and different fabrics.
8. Repairing (ripped seams) and replacing buttons and ornaments and any special work requested by the customer.
9. A finishing treatment which is also a highly technical process. For example, a special steam iron is used for pleats and certain fabrics; a "puff" iron for gathers, ruffles, smocking, etc.; steam boards for velvets; pressing machines for men's suits; and special equipment for neckties, gloves, hats, etc. Luster is restored to certain fabrics by a special oil treatment in the finishing room, also.
10. Packing by experts who use plenty of tissue paper, cardboard guards, etc., to prevent wrinkles and creases.

Special services are available to you at every good dry-cleaning plant.

Lampshades, rugs and carpets, upholstered furniture, woolen and knitted garments, foundation garments, curtains, blankets, comforts, slip covers and auto robes are given special attention and returned to you spotlessly clean and looking like new. Even automobile upholstery presents no difficulty to these experts.

Furs are cleaned so that all accumulations of greasy soil are removed. They are then given special treatments which restore their original softness and fluffiness.

Dry cleaners even help you to solve the ever-present problem of moth damage. When woolen articles must be put away for the summer, they will clean them thoroughly and return them to you in mothproof bags. Many cleaners maintain storage rooms of their own, with controlled refrigeration or fumigation, where you may have furs and woolens stored safely for a small fee. Many offer a process which protects woolens from danger of attack by moths. Be sure that this process is guaranteed, and read the terms of the guarantee carefully. See page 371 for further information on mothproofing.

Even with modern equipment and modern methods at their fingertips, dry cleaners are not magicians. They cannot remove certain stains which you have washed and ironed into the fabric (remember, heat and soap "set" several types of stains). They cannot bring back a finish that friction has destroyed. They cannot restore fibers that perspiration has weakened. Excess sizing and weighting sometimes found in cheaper fabrics present definite problems. So sometimes the cleaner may tell you that a spot cannot be removed, or that the garment must be cleaned at your own risk. Instead of being annoyed, you should realize that this is a fair treatment, accorded by a reliable business. You can help by telling the cleaner what caused certain spots and stains, if you remember.

CHAPTER XXV

SPOTS AND STAINS

Cranberry sauce on the best white damask, a spreading grease spot on a brand new dress, lipstick left by a careless guest on a fine linen towel, ice cream dribbled on little Martha Ann's party dress—common tragedies, to be sure, but real tragedies none the less if you don't know what to do about them.

Your chances for removing a spot or stain successfully are much greater if you act quickly. Time is against you, because a stain may actually change in composition as it dries. Exposure to air and light affect its character also. If you wait too long you may find that any treatment powerful enough to remove the stain will remove the fabric as well.

Never launder a stained piece of fabric unless you are sure that soap and water or the heat of ironing will not "set" it beyond hope of removal.

Unless you know what caused the stain and what type of fabric you are dealing with, don't try to remove the stain yourself. Take it promptly to a reliable dry cleaner instead. An unsuitable reagent may "set" the stain or destroy the fabric, so beware.

Even if you are certain of the nature of the stain and as sure of the fabric as is possible, always follow this procedure:

1. Look up the stain in the dictionary-table at the end of this chapter to find out what reagent and method to use.

2. Look up the suggested reagents in the chart on page 315 to see what effects they have on fibers and dyes.

3. Test the reagent on an inconspicuous part of the fabric and watch its effect.

4. If the fabric and color are unaffected, turn to the page in this chapter which outlines the chosen method in detail, and follow directions exactly.

5. Never forget to rinse all reagents from the fabric with great thoroughness, or the fiber may be attacked.

Photograph by William H. Zerbe

Boiling water, poured from a height, removes fruit stains.

Certain cautions must be observed if spot and stain removal is done at home:

1. *Never* use highly flammable solvents such as gasoline, benzine, naphtha, etc., for spot removal. The appalling total of deaths and injuries caused by explosions every year should be warning enough, but unfortunately many women believe that it is safe to use these solvents if they use them outdoors. They forget that friction from rubbing can generate a spark, all that is needed to set off an explosion. We repeat the warning given on page 89—never use gasoline, except as fuel for an automobile. And never use benzine or naphtha for any household purpose.

2. Non-flammable solvents such as carbon tetrachloride may be used, but even with these, precautions are necessary, because the fumes are poisonous:

   a. Use only in small quantity.

   b. Work in a well-ventilated room.

   c. Keep bottle stoppered while working.

3. Some reagents are poison. Label them clearly as such, and keep them in a safe place well out of the reach of children.

If you want to be forearmed, so that you can act quickly when mishaps leave spots and stains to deal with, you will need lists of necessary equipment and materials as a starting point:

Equipment

1 medium-size bowl
3 glass medicine droppers
3 glass rods with rounded ends
1 glass measuring cup
1 set measuring spoons
1 enamel tray
1 dull knife or small spatula
1 pair scissors
1 soft brush
1 bolt cheesecloth
Small glass bottles with tight stoppers for reagents
Paper towels
White blotting paper

Reagents, Their Purpose, Use and Reaction on Fibers and Dyes

Type	*Kinds*	*Purpose*	*Method*	*Effects on Fibers*	*Effects on Dyes*
Absorbents	Fuller's Earth, Chalk, Cornmeal, Dry starch, Dry-cleaning Powder	To absorb fresh stains from delicate light-colored fabrics	See "Using Absorbents," (page 317)	None	None
Solvents	Water	To dissolve and flush out stain	Sponging (page 317)	None, but fabric may waterspot	Certain colors may run, "bleed" or fade
	Alcohol* (denatured or wood)	To dissolve and flush out stain	Bowl or Pad Method (page 317)	Injures acetate rayon	May affect colors
	Ammonium Hydroxide	To dissolve and flush out stain	Bowl or Pad Method (page 317)	May injure fabric if too strong	Changes and removes some colors
	Amyl Acetate (banana oil)	To dissolve and flush out stain	Bowl or Pad Method (page 317)	May affect acetate rayon	May bleach out certain colors
	Acetone	To dissolve and flush out stain	Bowl or Pad Method (page 317)	Dissolves acetate rayon	May bleach out certain colors
	Carbon Tetrachloride (or commercial solvents with this base)	To dissolve and flush out stain	Sponging (page 317)	None	Almost none
Bleaches	Chlorine Bleach	To remove color	Bowl or Pad Method (page 317)	Injures silk, wool and rayon	Removes color. Use only on white cottons and linens
	Commercial Ink Removers	To remove certain inks	Follow manufacturer's directions	Will injure fabric if not rinsed out immediately	Removes color. Use only on white cottons and linens
	Acetic Acid Solution (10 per cent)	To remove color	Bowl or Pad Method (page 317)	None	Bleaches some colors

* Poison.

Reagents, Their Purpose, Use and Reaction on Fibers and Dyes—(*Cont.*)

Type	*Kinds*	*Purpose*	*Method*	*Effects on Fibers*	*Effects on Dyes*
Bleaches (*Cont.*)	Oxalic Acid Solution* (formula, below)	To remove color	Bowl or Pad Method (page 317)	Injures fabric if not rinsed out immediately	Removes color
	Potassium Permanganate Solution* (formula, below)	To remove color	Bowl or Pad Method (page 317)	Injures some rayons; injures other fabrics if not rinsed out immediately	Bleaches
	Hydrogen Peroxide	To remove color	Bowl or Pad Method (page 317)	None	Affects certain dyes
	White Vinegar	To remove color	Bowl or Pad Method (page 317)	Harmful to all cellulose	May affect color
	Sodium Hydrosulphite	To remove dyes, stains and certain inks	Bowl or Pad Method (page 317)	Discolors weighted silks	Removes color. Use only on white fabrics
	Sodium Thiosulphite (Hypo) (formula, page 317)	To remove iodine	Bowl or Pad Method (page 317)	None	None

* Poison.

Formulas for Reagents

Oxalic Acid Solution (POISON): Purchase oxalic acid crystals at a drugstore. For a solution of correct strength for stain removal, dissolve 1 teaspoon of crystals in 1 measuring cup hot water. Store in tightly stoppered glass bottle. Label both crystals and solution POISON and store in a safe place, out of reach of children.

Potassium Permanganate Solution (POISON): Crystals of potassium permanganate may be purchased at a drugstore. A solution of correct strength for stain removal is made by dissolving 1 teaspoon of crystals in 2 measuring cups of water. Label both crystals and solution POISON and store in a safe place, out of reach of children. This reagent cannot be used

alone, as it leaves a brown stain. Follow with oxalic solution on cotton, silk or linen, and with hydrogen peroxide on wool.

Sodium Thiosulphite Solution ("Hypo"): In crystalline form, this chemical may be purchased at a photographic supply shop or drugstore. Dissolve 1 tablespoon of crystals in 2 measuring cups of water for a solution of correct strength for stain removal.

Methods for Removing Spots and Stains

I. *Using Absorbents*

Spread the stained fabric on a flat surface and cover the stain thickly with an absorbent. Work the absorbent around gently, and as it takes up the stain, shake or brush it off and apply a fresh layer. Continue until no more of the stain is taken up. Cover with a fresh layer and leave for several hours or overnight. Brush fabric thoroughly with a soft brush to remove all traces of absorbent.

This treatment is effective for fresh stains, particularly grease spots on light-colored delicate fabrics. *Do not use absorbents on dark materials,* because it is extremely difficult to remove all traces by brushing.

A quick treatment for a grease spot and one that is essential if the stain is made by a solid fat, is to place several thicknesses of paper towelling over the absorbent and press with a warm iron for several minutes. Then brush thoroughly with a soft brush. Repeat if necessary.

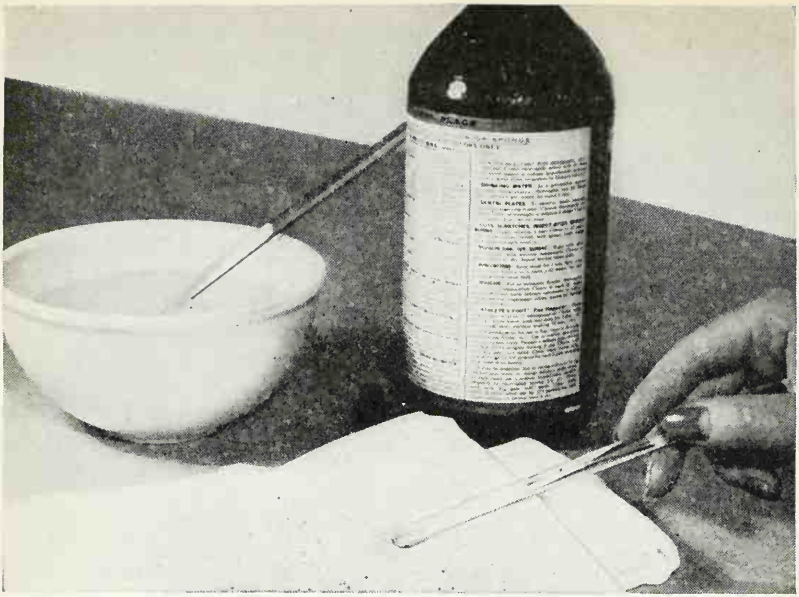
II. *Sponging with Solvents*

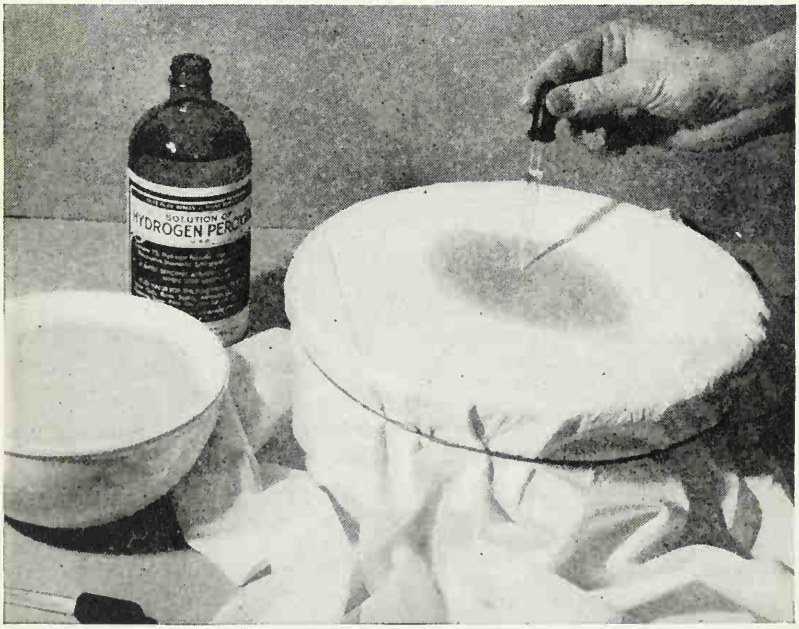
1. Place the fabric, spot side down, on a pad of cheesecloth or white blotting paper. (The pad absorbs the stain as it is dissolved, together with the solvent, and helps to prevent a ring. It should be changed as soon as soiled, or the stain may be transferred back to the fabric.)
2. Moisten a clean, soft, lintless cloth slightly with the solvent and apply to the stain with light, straight strokes, working from the outside toward the center of the spot. Spread the moisture unevenly into the fabric to help prevent a ring. Work rapidly, blowing on the damp area to evaporate the solvent quickly.
3. Change the sponging cloth as soon as it is soiled, or the stain may be transferred to the fabric again.

III. *Using Chemical Reagents (Bleaching)*

A. *The Bowl Method*

1. Stretch the stained fabric over a bowl of water; secure with an elastic band.





Photographs by Patricia Hall and William H. Zerbe

Top: The "pad method" for spot removal, shown here, is described on page 319.

Bottom: The "bowl method" for spot removal, shown here, is described on page 317.

2. Moisten the stain with clear water applied with a medicine dropper.
3. Drop reagent on stain, using another medicine dropper; let stand 1 minute.
4. Follow with water, using original dropper.
5. Apply a neutralizing reagent if called for, using a third dropper.
6. Rinse thoroughly with clear water.

Repeat if necessary.

Remember that several short applications are safer and more effective than a single prolonged application.

B. *The Pad Method*

1. Place stained fabric on an absorbent pad, spot side down, as for sponging (page 317). Change pad as soon as soiled.
2. Moisten stain with clear water, using a glass rod.
3. Apply the reagent, using another glass rod.
4. Follow with water, using original glass rod.
5. Apply neutralizing reagent, if called for, using third glass rod.
6. Rinse thoroughly with clear water.
7. Repeat entire procedure if necessary.

Remember that several brief applications are safer and more effective than a single prolonged application.

Rings—Cause, Prevention and Cure

Sometimes, after a spot or stain has been removed, a ring is left behind which looks almost as sad as the stain itself. There are several reasons for this and if they are understood it is easier to avoid the difficulty.

If the fabric is covered with a thin film of general soil which is removed from one area along with the stain, the cleaned spot will stand out in a ring of soil. The only remedy for this is to launder the whole piece if it is washable, or send it to the dry cleaner if it isn't.

Often there is a dressing in the material which is pushed back by the solvent and forms a ring. Light, straight strokes with a sponging cloth barely moistened with solvent, as described under "Sponging," page 317, help avoid this condition.

Fibers sometimes tighten when wet, and the texture of the fabric is changed, forming a ring. Too much solvent is the cause of this trouble and it may be avoided by barely moistening the sponging cloth.

Slow evaporation of the solvent may cause a ring. To do away with

Photograph by Patricia Hall

Always place an absorbent pad under the spot when sponging with cleaning fluid.

this, use the solvent sparingly and work quickly, blowing on the damp area to speed evaporation. If too much solvent is used accidentally, blot it up quickly with a dry cloth or white blotting paper.

Occasionally a ring shows after a grease spot has been treated because some of the grease has not been flushed out. Repeat the treatment and the ring may disappear.

Absorbents do not leave rings, and will remove fresh stains from light-colored materials. For old or stubborn grease spots on delicate materials, use a paste made of the absorbent and carbon tetrachloride. Spread this paste on the spot and when it is thoroughly dry, brush it off with a soft brush. This treatment will not leave a ring.

If, in spite of all precautions, a ring is formed, try one of the following ways to remove it:

1. Place the ringed area, right side up, on a clean pad and rub the edge of the ring lightly with a fingernail or the edge of a spoon.
2. Tie several thicknesses of cheesecloth over the teakettle spout. When the water is boiling, hold the ringed area in the steam until it is barely moist. Shake it dry and press.
3. Rings on crepe material sometimes disappear if the fabric is rubbed gently between the hands.

Stain Removal Simplified

Kind of Stain	*Washable Fabrics*	*Non-Washable Fabrics*
Adhesive Tape	Sponge with carbon tetrachloride.	Same as washable.
Argyrol	Wash in warm suds; follow with ammonium hydroxide,* using bowl method (page 317).	Take to expert dry cleaner promptly.
Blood	Soak in cold water; wash or sponge in warm suds; rinse well. If stain remains, soak in ammonia water, using 1½ tablespoons ammonium hydroxide to 1 gallon water until stain is loosened. Launder. On thick materials, such as blankets or mattresses, spread stain thickly with paste of raw starch and water; let dry; brush off; repeat if necessary.	If fabric will not water-spot, sponge with cold water; treat remaining stain with hydrogen peroxide,* using the bowl method (page 317) or pad method (page 319). Rinse thoroughly. Or take to expert dry cleaner promptly.
Butter	Launder in warm suds.	Sponge with carbon tetrachloride.
Candle Wax	Scrape off excess with dull knife or spatula. Put stained area between white blotters and press for several minutes with warm iron, changing blotters as soiled. If stain remains, sponge with carbon tetrachloride or alcohol.*	Same as washable.
Chewing Gum	Scrape off excess with dull knife or spatula. Rub with ice until chewing gum rolls into a ball. Sponge with carbon tetrachloride.	Scrape off excess with dull knife or spatula. Sponge with carbon tetrachloride.
Chocolate or Cocoa	Scrape off excess with dull knife or spatula. Wash in warm suds. Rinse thoroughly. If stain remains, sponge with carbon tetrachloride or soak in alcohol* to which a few drops of ammonium hydroxide* have been added. Rinse thoroughly. Or use chlorine bleach* with bowl method (page 317) or pad method (page 319).	Scrape off excess with dull knife or spatula. Sponge with carbon tetrachloride. If stain remains, treat with hydrogen peroxide,* using bowl method (page 317) or pad method (page 319).
Cod Liver Oil	Sponge with carbon tetrachloride to remove grease. Launder while still wet. If stain remains, use chlorine bleach.*	Take to expert dry cleaner promptly.

* See chart, pages 315–316, for effect on fiber and color. Test unexposed portion of fabric first.

Stain Removal Simplified—(*Cont.*)

Kind of Stain	*Washable Fabrics*	*Non-Washable Fabrics*
Coffee	Stretch stained portion of fabric over bowl; fasten with elastic band. Pour boiling water through stain, holding spout of kettle 2–3 feet above stain. Launder. *Old Stains:* Use chlorine bleach* or alternate applications of potassium permanganate* and 5 per cent solution oxalic acid,* using the bowl method (page 317) or the pad method (page 319).	If not certain of fabric, take to expert dry cleaner promptly. If fabric will not waterspot, sponge with lukewarm water; let dry. If grease remains, sponge with carbon tetrachloride.
Cream	Rinse with cold or lukewarm water. Launder.	Sponge with carbon tetrachloride.
Dyes	If stained fabric is white and can be boiled, use commercial color remover or stripping compound, which can be purchased in a drugstore. Follow directions on the package. Or, Bleach with chlorine bleach* or sodium hydrosulphite* or hydrogen peroxide.* Use bowl method (page 317) or pad method (page 319).	Take to expert dry cleaner promptly.
Egg	Remove excess with spatula or dull knife blade; soak in cold water; launder.	If not certain of fabric, take to expert dry cleaner promptly. If fabric will not waterspot, sponge with cold water; dry. If grease remains, sponge with carbon tetrachloride.
Fruit and Berry	Stretch stained fabric over bowl; secure with elastic band. Pour boiling water through stain, holding teakettle spout 2–3 feet above stain.	Take to expert dry cleaner promptly.
Glue	Soak in warm water; launder. If dried, sponge with dilute acetic acid;* launder.	Sponge with carbon tetrachloride.
Grass and Foliage	Rub with heavy suds, using soft brush. If stain remains, use chlorine bleach* or hydrogen peroxide* with bowl method (page 317) or pad method (page 319).	Sponge with alcohol.*
Grease Food	Scrape off excess with dull knife or spatula. Sponge with carbon tetrachloride; launder.	Scrape off excess with dull knife or spatula. Sponge with carbon tetrachloride.

* See chart, pages 315–316, for effect on fiber and color. Test unexposed portion of fabric first.

Stain Removal Simplified—(*Cont.*)

Kind of Stain	*Washable Fabrics*	*Non-Washable Fabrics*
Grease (*Cont.*) Automobile, Road Oil, etc.	Scrape off excess with dull knife or spatula. Rub lard into spot until no more grease is picked up. Scrape off lard; launder.	Scrape off excess with dull knife or spatula. If no dirt is present use absorbent (page 315). If stain remains, sponge with carbon tetrachloride or take to expert dry cleaner.
Ice Cream	Sponge with carbon tetrachloride or warm water. If stain remains, treat according to its nature (fruit, chocolate, coffee, etc.).	If fabric will not waterspot, sponge with warm water; dry. If stain remains, sponge with carbon tetrachloride.
Indelible Pencil	Soak in alcohol;* launder. If stain remains, try chlorine bleach,* using bowl method (page 317) or pad method (page 319).	Take to expert dry cleaner.
Ink	Inks differ, so one or more treatments should be tried, in following order: 1. While still moist, spread with absorbent; brush off; repeat until no more ink is taken up. 2. Launder in warm soapsuds. 3. Commercial ink remover.* 4. Soak 1–2 days in milk; launder.	Blot up excess. Take to expert dry cleaner promptly. *Rugs:* Blot up excess. Sponge with water. If stain remains when dry, sponge with carbon tetrachloride. If not effective, consult reliable rug cleaning firm.
Iodine	Fresh stains will usually wash out; if not fresh, try immersing in sodium thiosulphite (hypo) solution (page 317) and then launder; or sponge with alcohol;* or sponge with dilute solution of ammonia (6 drops ammonium hydroxide* in ½ measuring cup water). On heavy materials such as blankets, apply paste made of raw starch and warm water thickly; let dry; brush. Repeat if necessary.	Take to expert dry cleaner promptly.
Iron Rust	Stretch fabric over bowl of steaming hot water; moisten stains with clear water. Apply lemon juice with medicine dropper. Rinse. Repeat if necessary. Or sprinkle stain with salt, moisten with lemon juice and expose to direct sunlight. Or use an iron rust soap according to directions on package.	Take to expert dry cleaner promptly.

* See chart, pages 315–316, for effect on fiber and color. Test unexposed portion of fabric first.

Stain Removal Simplified—(*Cont.*)

Kind of Stain	*Washable Fabrics*	*Non-Washable Fabrics*
Lipstick or Rouge	Sponge with carbon tetrachloride; launder. If stain remains use chlorine bleach* or hydrogen peroxide,* using bowl method (page 317) or pad method (page 319). Stains from some indelible lipsticks must be taken to expert dry cleaner even though fabric is washable.	Sponge with carbon tetrachloride. If stain remains take to expert dry cleaner.
Mercurochrome	Wash out as much as possible in clear water. Remove any remaining stain with chlorine bleach* or hydrogen peroxide,* using bowl method (page 317) or pad method (page 319). This stain is almost impossible to remove from delicate materials by home methods.	Take to expert dry cleaner promptly.
Mildew	Very fresh stains can sometimes be removed by laundering. Dry in direct sunlight. If not removed, try soaking in a solution made by adding 1 pint chlorine bleach* to 1 gallon water; or spread stains with salt and lemon juice and place in direct sunlight. Or try alternate applications of potassium permanganate* solution and oxalic acid* solution, using the bowl method (page 317) or the pad method (page 319). Old stains are almost impossible to remove, because mildew is a fungus growth which actually attacks the fibers.	Take to expert dry cleaner promptly.
Milk (*see* Cream)		
Mud	Let dry thoroughly; brush well. If stain remains, sponge with alcohol;* launder.	Let dry thoroughly; brush well. If stain remains, sponge with carbon tetrachloride.
Nail Polish	Apply amyl acetate,* using pad method (page 319); launder.	Take to expert dry cleaner promptly.
Paints and Varnish Water Color Paint	Wash in warm suds.	Sponge with carbon tetrachloride or turpentine.
Oil Paint or Varnish	Sponge with alcohol* or carbon tetrachloride.	Sponge with carbon tetrachloride or turpentine.
Shellac	Soak in a solution of equal parts alcohol* and water.	Sponge with carbon tetrachloride or turpentine.

* See chart, pages 315–316, for effect on fiber and color. Test unexposed portion of fabric first.

Stain Removal Simplified—(*Cont.*)

Kind of Stain	*Washable Fabrics*	*Non-Washable Fabrics*
Paints and Varnish —(*Cont.*) Alcohol Paints or Stains	Wash in warm suds if fresh. Or sponge with alcohol.* If stains are not fresh, saturate with turpentine and roll up until paint softens. Sponge with additional turpentine; launder.	Sponge with carbon tetrachloride or turpentine.
Perspiration	Launder promptly. If color has changed, hold stain over open bottle of ammonium hydroxide. If color is gone, nothing can be done. On white material the following treatment may be used: add a few drops ammonium hydroxide* to hydrogen peroxide.* Place stained material over bowl of steaming water. Apply solution with medicine dropper. Rinse. Repeat if necessary. *Note:* Reliable non-perspirants or dress shields do away with this problem.	Take to expert dry cleaner promptly but do not blame him if he says the damage cannot be repaired.
Salad Dressing	Sponge with cool water; dry. Remove grease that remains by sponging with carbon tetrachloride. Launder.	Sponge with carbon tetrachloride.
Scorch	For slight scorch moisten stain with clear water and place in direct sunlight. For a more severe stain on white material, place cloth dampened with hydrogen peroxide* over stain; place dry cloth over this; press with warm iron. Replace top cloth as hydrogen peroxide* soaks through. Repeat if necessary. Severe scorching injures fibers and cannot be removed.	Take to expert dry cleaner promptly.
Tea Fresh	Treat as for fruit stains. If grease remains when dry, sponge with carbon tetrachloride. Launder.	Take to expert dry cleaner promptly.
Old	Treat with alternate applications of potassium permanganate* solution and oxalic acid* solution, using bowl method (page 317).	
Wine	Stretch stained portion over bowl; secure with elastic band. Cover stains with salt; continue as for fruit stains.	Try an absorbent (page 315). If stain remains, take to expert dry cleaner.

* See chart, pages 315–316, for effect on fiber and color. Test unexposed portion of fabric first.

SECTION FOUR

The Decorator's Touch

Custom-made slip covers, draperies, curtains and dressing table skirts are on the expensive side. Ready-made articles may not meet all your requirements as to color and style. But for very little money you can make these articles yourself, choosing a fabric that is exactly right in color and pattern, and selecting a style that suits the room you are decorating.

Of course there are many satisfactory ways to make slip covers and the other articles described in this chapter. But we believe that you will find the following directions are clear and easy to follow.

SLIP COVERS

1. *Taking Measurements:* For taking actual measurements, proceed as follows. The wing chair (page 327) is used as an example:

Bring tape from floor in back *A* to top of chair *B*.

From top of chair *B* down front to seat *C*, add 3″ to this measurement for "tuck-in" allowance at seat.

From back of seat *C* across seat to *D*. Add 3″ for tuck-in.

From *D* to floor at center front *E*.

From *F*-arm to floor *G*.
From *H* at back to front *I*.
} 2 pieces required for this section.

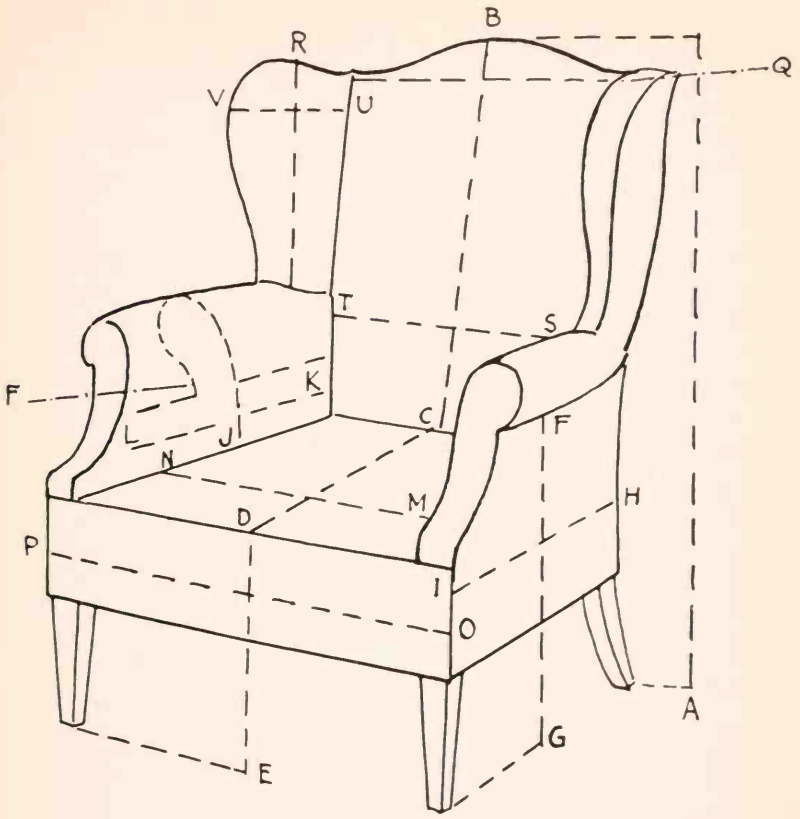
From *F*-arm to seat *J*, add 3″ on each side for tuck-in allowance.
From *K*-back to *L*-front of arm, add 3″ at K for tuck-in.
} 2 pieces required for this section.

From *M* to *N* across seat, allowing 3″ on each side for tuck-in.

From *O* to *P* across front.

From *Q* to *R*, and *S* to *T* across back, allowing at each point a 3″ tuck-in.

From *U* to *V*, across wing, adding 3″ for tuck-in allowance.



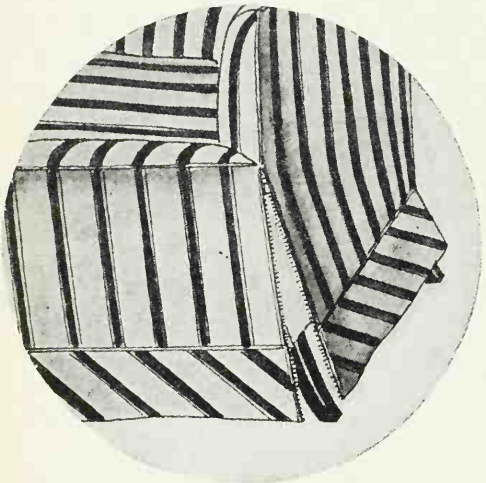
Directions for measuring a chair according to this diagram are given on the opposite page.

For separate cushion, measure across and lengthwise. Consider that two pieces this size are required. Then measure depth of box and the circumference.

2. *Length of Slip Covers:* The ruffle should clear the floor by 2½ inches. For permanent covers, follow the line of the original upholstery or the muslin cover.

3. *Material Requirements:* To estimate the amount of yardage required, consider the full width of the material. These materials usually come in either 36″ or 50″ widths. When using a 50″ width, very often

the smaller sections can be cut from the side, after main pieces have been cut. Take the total of the back length, front back, seat, front from seat to floor, the side measurement over arm to seat doubled, the length of the cushion doubled. Figure the tuck-in allowances and a *generous* ¾" *seam on all edges*. Reduce this total to yards. Generous estimates should be used in buying the material and, if a material with a repeat design



Attaching the zipper closing: The opening for the zipper should be made at the side of the back leg. Use a long slide fastener, applying it as you would in a placket. Use the cording foot attachment to stitch in the zipper.

has been selected, which requires matching and placing, allow an extra ¾ to 1½ yards more, depending on the size of the motifs.

4. *Opening:* This should be made at the side of the back leg, using a long slide fastener, applying it as you would in a placket. The opening for separate cushion should be made near the seam across the back or one side on underneath side. If snappers are used instead of the slide fastener, use plenty of them.

5. *Slip Cover Pattern:* Commercial paper patterns are available for slipcovers, designed to fit different types of chairs and sofas. These may be pinfitted and altered if necessary in much the same manner as a dress pattern. However, one may make one's own pattern of either paper or muslin (muslin is better, of course). Use a firm woven material, one which is pliable but does not stretch to any extent.

6. *Making Muslin Cover:* Following your measurements, cut your muslin in lengths, corresponding with measurements plus generous seam allowances and tuck-in. Be sure to follow the thread of your

Top left: A muslin pattern is easy to work with, and can be used each time the chair is recovered. Note the electric shears for quick cutting.
Top right: The cover cut from the muslin pattern is "tried on" the chair and pinned carefully to assure a perfect fit.
Lower left: The cording foot attachment hugs the fabric closely around the cord as you stitch, making yards of finished welting in a few minutes.
Lower right: The finished cover looks like a professional job.

fabric. This is just as important in making slip covers as it is in dressmaking. Keep lengthwise on up and down and crosswise thread crosswise of the chair. Carelessness in following the weave will result in an ill-fitting, baggy slip cover. Place each piece in its position, and pin-fit.

Place pins lengthwise, to adjust the slight fullness at arm seams, back, etc. Join all pieces, completely covering the chair.

With all pieces fitted to your satisfaction, take a piece of colored tailor's chalk and mark all seams along pinned lines. Then, mark each section for identification, as back, front, seat, left arm, right arm, etc. Make matching notches on all sections, before removing the pins. The notches are very necessary, particularly where a slight fullness in one section is to be eased in, when joined to corresponding section.

7. *Cutting Material:* Cut material from muslin pattern. The slip cover is easily cut from this muslin or paper pattern. Place pattern on material so that the motifs of the printed design fall where they should. If plain material is used a pattern is not so necessary. The material may be blocked—that is, cut in various-sized pieces—as suggested for making muslin pattern and pinfitted in the same manner. It is much easier to handle the material if cut into short lengths, corresponding to measurements.

8. *Seam Finishes:* The seams are finished with either welting, fringe, French seams or a bound seam. The use of welting and fringe is the most popular, and there are special sewing-machine attachments for making these at home. To estimate the amount of welting or fringe required, measure all seams while fabric is pinned on chair.

9. *Personal Help:* There are one or more modern sewing centers in almost every community where personal help in the making of slip-covers or any other sewing problem may be obtained without cost or obligation.

CURTAINS AND DRAPERIES

Materials

Glass curtains should be sheer and light-colored. Curtains in different rooms should be fairly similar in color and texture, so that a uniform effect is achieved throughout the house. Popular materials are voile, net, dotted Swiss, organdy, theatrical gauze, celanese ninon and mesh.

Draperies: It is best to get samples of material and place them where they are to be used, before making a final selection. Choose fabrics that are pre-shrunk (page 284), colorfast and sunfast.

Lengths of Glass Curtains and Draperies

Glass Curtains: The length of the glass curtains corresponds with the length of draperies, except when a radiator, window seat or some built-in fixture is underneath the window. In such cases, the glass curtains should be sill length, and the draperies floor length. Glass curtains, of course, should never drape on the floor even when used with draperies that do. In such cases, glass curtains just clear the floor.

Draperies may be either floor length, sill length or draped on the floor.

Floor Length: This length is popular for all decorative schemes. The draperies hang straight, just clearing the floor. Tie-backs are not used unless the draperies meet at the top center. In this case, curtains are drawn back so that the inside edges cascade to the outer edge, which reaches the floor.

Sill Length: If windows are recessed or have extended window sills, sill-length draperies are proper.

Draped on Floor: For very formal rooms draperies are cut long enough to drape 6–12 inches on the floor.

Measurements

In planning curtains, *actual measurements* of each window are of great importance. Very often two or more windows may appear to be the same in width and height, yet measurements show that they vary two inches or more.

Glass curtains: Hems may be 1–2½ inches deep. Hems in sheer materials are made double. Allow 4 inches at the top for casings and heading, plus ¼ inch for a turn-in. It is best to buy pre-shrunk material (page 284) or it will be necessary to allow 1 inch per yard for shrinkage.

To figure the yardage for a sheer glass curtain 60 inches long with a 2½-inch double hem.

Window length	60 inches
Double 2½" hem	5 inches
Casing	2 inches
Heading	2 inches
Shrinkage	1¾ inches
Turn in for top hem	¼ inch
	71 inches

The width allowance depends on the sheerness of the fabric. For very sheer material it is customary to use twice the width of the window. It is a mistake to split narrow widths, because of the skimpy effect.

Draperies: To length measurement, add 1 inch for rod, 2 inches for heading and 6 inches for 3-inch top and bottom hems.

Use a tape measure to measure curtain lengths. Too often, the fabric is stretched when a yardstick is used. Lay the tape measure on the fabric so that it will be in line with the edge that is being measured.

Making Plain Glass Curtains

1. Measure carefully (page 331).
2. Remove all selvedges or finished curtains will not hang straight.
3. Draw a thread as a guide for cutting.
4. Hems at sides away from window should be about ½ inch wide when finished.
5. Center side hems and bottom hems may be 1 to 2½ inches wide.
6. When using sheer materials turn a double hem at the bottom.
7. Finish all hems before making casings and headings.
8. Allow 3¼ inches above top of rod for casings and heading. Turn edge under ¼ inch. Turn 2-inch hem. Pin, press and stitch on turned edge.
9. Measure 1 inch from row of stitching and stitch again, to form casings.

Making Draperies

1. Measure carefully (pages 331–332).
2. Remove all selvedges so that draperies will not bag.
3. Cut all lengths on a drawn crosswise thread.
4. Hem *unlined draperies* as follows:

   (*a*) Unlined draperies are often finished at the top with pleats and the top hem should be faced with a strip of crinoline or buckram.

   (*b*) Place strip of crinoline across the top on wrong side. Turn edge of fabric back over crinoline about ¼ inch. Stitch along edge. Make another row of stitching along opposite edge of crinoline, turn hem and press.

(*c*) Turn side hems; press mitered corners of top hem and slip stitch by hand. Hem below heading may be stitched on the sewing machine or put in by hand.

(*d*) Put in pleats (below).

(*e*) Turn bottom edge back ¼ inch and stitch on fold.

(*f*) Turn hems the width necessary and slip stitch in by hand.

5. *Lined draperies:*

(*a*) Lining protects fabric, and lined curtains hang in richer folds or drape more gracefully.

(*b*) Use sunfast cream-colored sateen or white sateen for most fabrics. For richer fabrics use taffeta or satin.

(*c*) Cut linings 4 to 5 inches narrower than draperies and 8 inches shorter.

(*d*) Place lining on drapery fabric, right sides together with lining material 5 inches below top of drapery fabric. Stitch.

(*e*) Clip seams every 4 or 5 inches. Press seam open.

(*f*) Turn curtain right side out and press from right side.

(*g*) Turn heading hem down; baste. Turn in edge of lining and whip down by hand over raw edge of drapery hem.

(*h*) Turn back side hems about 1 inch on both edges. Press turned back edge before turning hems.

(*i*) Hem bottom of lining about 2 inches above drapery hem.

Pleats and Top Finishes

Pleats should be arranged in groups of uneven numbers—three, five or seven. The number depends on how many pleats are needed to take up extra fullness.

1. Measure width of unpleated curtain.
2. Measure rod.
3. Measure "return" (distance from turn of rod to wall).
4. Add "return" figure to rod length for width of finished curtain after pleating.
5. Subtract width of pleated curtain from width of unpleated curtain to find surplus width.

6. Divide surplus into pleats.

(*a*) Measure exact position and width of pleats before stitching, marking with pins.

(*b*) Place 1st pleat at curve of rod—3 inches from outside edge.

(*c*) Place 2nd pleat at opposite end 2 inches from center edge.

(*d*) Place 3rd pleat in exact center between 1st and 2nd pleats.

(*e*) Place 4th pleat in exact center between 1st and 3rd pleats.

(*f*) Place 5th pleat in exact center between 2nd and 3rd pleats.

(*g*) Fold and stitch pleats straight down below crinoline heading (page 332).

French Pleats: This type of pleat is extremely popular. It is used for draperies, and for glass curtains in instances where no draperies or valance are used. At bottom of heading divide pleat into three smaller pleats and run needle through all three pleats. Draw up thread and fasten securely underneath.

Pinch Pleats: Divide one large pleat evenly into three small pleats; press in firmly. Stitch the three folds evenly across lower edge.

Box Pleats: Spread the pleats for an equal distance on each side of stitching and press flat. Tack securely at top and bottom, or stitch across bottom. The space between the pleats (from fold to fold) should be the same as the width of the pleat. This is a good type of pleat when valances are to be used.

DRESSING TABLE FROU FROU

A properly dressed vanity table is hidden from top to toe. The skirt conceals the sides and legs and the top itself is covered completely either by fabric or a lace runner, with or without a fitted glass top. If the top is covered with fabric it should be padded slightly. A layer of cotton flannel will serve. Stretch it taut, so that the lengthwise thread of the fabric runs up and down, and the crosswise grain across the table top; than tack it to the table edge. Repeat with the covering fabric. If the table has hinged arms that open out to show the edge of the table, fasten a straight finishing strip over the tacks.

Dressing-table skirts may be made of glazed chintz, plain or figured, quaint cotton prints, piqué trimmed with cording, taffeta, satin, lace and many other materials.

A dressing-table skirt is usually made in two sections with an open-

ing at the center front to allow access to drawers or shelves. If the table has hinged arms which swing out, the skirt is fastened to these.

Measuring

1. Measure the length from the top of the table to the floor and add a 3-inch allowance for heading and hems.

2. For width, measure around the sides and front of the table and add a 4-inch allowance for the material which extends around to the back of the table. Double this measurement to allow for average fullness.

The heading may be a shirring or pleating of the skirt top itself with a band of buckram or crinoline slip-stitched on the back for tacking to the table. Or the heading may be corded and then shirred. A shaped band or a separate ruffle is also popular. The choice of a heading depends on the fabric and the effect that is wanted. The length of heading for each part of the skirt should be ½ the measurement around the table.

Types

If you have a dressing table in the bathroom an original idea is a dressing-table skirt made of bath towels—two stitched together lengthwise for each side—trimmed with ball fringe.

A pair of lace net curtains to match those at the windows can be made into a dressing-table skirt very easily. Cut two curtains in half and stitch two halves together lengthwise for each side. Use the ruffling detached from the sides of the curtains as a valance across the top and catch it up at evenly spaced intervals with ribbon bows or tiny bouquets of artificial flowers.

Here are detailed directions for making several attractive dressing-table skirts:

Dressing-Table Skirt of "Tissue Antique" with narrow corded and shirred heading and chintz or taffeta bows.

To make—Cut fabric widths to the measurements, remembering that the lengthwise thread of the fabric should run up and down the skirt in order for it to hang well. Remove all selvedges and join the fabric widths with narrow French seams. Turn and stitch the front, back and bottom hems. The hem widths should be 1 inch for the center front, ½ inch for the back, and from 1¼ to 2 inches for the bottom hem. A double hem is often used on the bottom and is usually slip-stitched by hand. The front hem may be made practically invisible by

stitching in the usual way and then turning the stitched hem back on the wrong side and tacking with tiny stitches every few inches.

Making a shirred and corded heading with the cording foot. Turn down 1 inch on the top edge of the skirt and crease. Turn down again over a ⅛-inch cable cord and with the cording foot, stitch on the machine, crowding closely to the cord. Fasten the cord at one end and pull on it until the fabric is shirred to the measurement of the heading section.

Making a stiffened band. A stiffened band about 2 or 2½ inches in width is slipstitched to the back of the heading to hold it smoothly in place. This band is tacked to the edge of the dressing table. *To make*—cut a strip of buckram ½ the length of the measurement around the table and about 2 inches wide. Cut a strip of fabric this length, plus ½-inch allowance for each seam, and twice the width of the buckram strip, plus seam allowance. Fold the fabric strip through the center, place the buckram strip in the fold, turn the fabric edges in and over the buckram and stitch or slipstitch the edges together.

For a tailored bow of chintz—Cut a straight strip of fabric twice the width desired in the bow, and about ½ inch longer than the length wanted. Fold the strip through the center, right sides together, and stitch across one end and down the side. Turn and slipstitch other end. Press and tie knot in center.

The "Minuet Skirt." An over-skirt of flowered challis is drawn smoothly around the table ledge. Showing beneath is a full-skirted muslin-ruffled shield. The whole effect is quaint and lovely, and particularly good for a summer bedroom.

For a table 30 inches high and 32 inches long, get 1 yard of 39-inch challis, 2¼ yards of 36-inch muslin, cording for edge and ribbon for bows.

1. Cut challis in half, into two pieces 19½ inches wide by 36 inches long.
2. Seam the narrow hems at each end, for the top skirt.
3. Make a 3-inch hem at the bottom.
4. Finish the two pieces of challis with a two-tone corded edge, using the cording foot.
5. Part the skirt at center front, and draw it back to the front corners of the table ledge with ribbon bows.
6. For the ruffled underskirt, cut a piece of muslin 22 by 36 inches (or the width and depth of the front of the table to the floor) so that it fits snugly.

7. Allow 1 inch on each of the 22-inch sides for narrow hems at the bottom.
8. Cut another piece of muslin 40 inches long and the full 36-inch width.

This organdy dressing table skirt is described on the next page.

9. With the hemstitcher attachment, stitch along marked lines 3 inches apart.
10. Cut through the hemstitching to make picoted edges on each strip.
11. Make ruffles with the ruffler attachment.
12. Attach the ruffles to the straight piece in one stitching operation.
13. Use upholstery pins to anchor the four corners of this underskirt to the front table legs, top and bottom.

Organdy Dressing Table Skirt (page 337). This skirt requires 4¼ yards of 36- or 39-inch organdy, 2 yards of 50-inch sateen for the foundation, 9 yards of 1½-inch satin ribbon and a snap band (which may be purchased by the yard in any department store).

1. Cut three 36-inch lengths of organdy from the piece.
2. Cut off all selvedge edges.
3. Join together side by side with French seams.
4. Turn the outside edge in ¼ inch, then ½ inch and stitch.
5. For the bottom hem, turn up 1½ inches and then make a second turn of the same depth. Stitch the hem in.
6. Cut the sateen in two pieces 34 inches long; seam together.
7. Turn the side edges in ¼ inch, then ½ inch and stitch. The hem is the same depth as that on the skirt.
8. Turn the sateen down 1 inch.
9. With the ruffler attachment, gather it on the snap band.
10. Attach one-half around the side and front edge of the dressing table frame with tacks, and stitch the other to the skirt.
11. For the heading of the organdy skirt, turn the fabric as for the hem.
12. With the ruffler attachment, gather the skirt on to the sateen and snap band, allowing a heading of 1¼ inches to stand up above the band.
13. For the frilly bands of ruffles that trim the skirt, cut the remaining 1½ yards of organdy into seven strips 4 inches wide and 45 inches long.
14. With the hemstitcher attachment, finish all four sides of each piece with hemstitching and snip off the outer edge to form a picot finish.
15. With the buttonhole attachment, make ¾-inch buttonholes spaced 3 inches apart along the entire length of the ruffle.
16. Ruffle each 45-inch strip with the shirring attachment.
17. Run two rows of shirring down the middle of each strip, 1 inch apart; adjust the shirring to the 30-inch length of the dressing table skirt.
18. Cut the ribbon into seven lengths 32 inches long; weave through buttonholes.

19. Hand tack the ruffles to the skirt every few inches, placing them equidistantly around the skirt, 3 on each side and 1 in the center front.
20. Cut the remaining ribbon into seven pieces of equal lengths (a little over 14 inches each) and tie in bows.
21. Tack bow to each ruffle, at the bottom of the ribbon.

DECORATOR TRICKS

The attachments for a modern sewing machine make it easy to achieve professional effects. The sewing center in your community will show you how to use these attachments at little or no expense to you, and you will find that with a few yards of material and a sewing machine you can transform an ordinary room into one that is unusual and lovely.

Headboards

Square-top, modern headboards may be prepared for slip covering in several ways. If the bed has a rounded headboard, it can be squared by building up with padding or compo board. If it is a square-top type to begin with, follow the instructions, using the measurements of your own headboard. If the headboard is rounded and you want to keep it that way, the slip covering must be shaped at the top.

1. To estimate the amount of material required, measure across the top of the headboard for width and from top to bottom of headboard for depth.
2. Lay the material lengthwise across the front of the headboard to avoid any seams down the center front.
3. This piece of material should extend down beyond the mattress to a point parallel with the back piece.
4. Join the narrow side and top pieces to the front and back pieces with heavy corded edges, using the cording foot attachment of the sewing machine.
5. Slip the headboard cover over the top and fasten snugly at the back with a long slide fastener closing.

Bolsters

Bolster covers may be made for any type mould, or for the muslin type of bolster mould that can be bought. Measurements must conform to the size of the mould.

1. To estimate the amount of material required, measure the length of the bolster and the width around the circular part.
2. Attach a 12-inch slide fastener to the edge of the two long sides of this flat piece of material, using the cording foot.
3. The amount of material for the side pieces is determined by measuring the depth and width of these circular discs.
4. Join these pieces to the cover with the cording foot attachment for a firm and decorative finish.

Fabric Suggestions and Decorator Finishes for Headboard and Bolster. Gingham is used for the background piece of the first headboard illustrated on page 341. This background piece is quilted in crisscross fashion with the quilter attachment of the sewing machine. The inside border that makes a solid framework for the gingham is finished with a picot edge, made with the hemstitcher attachment.

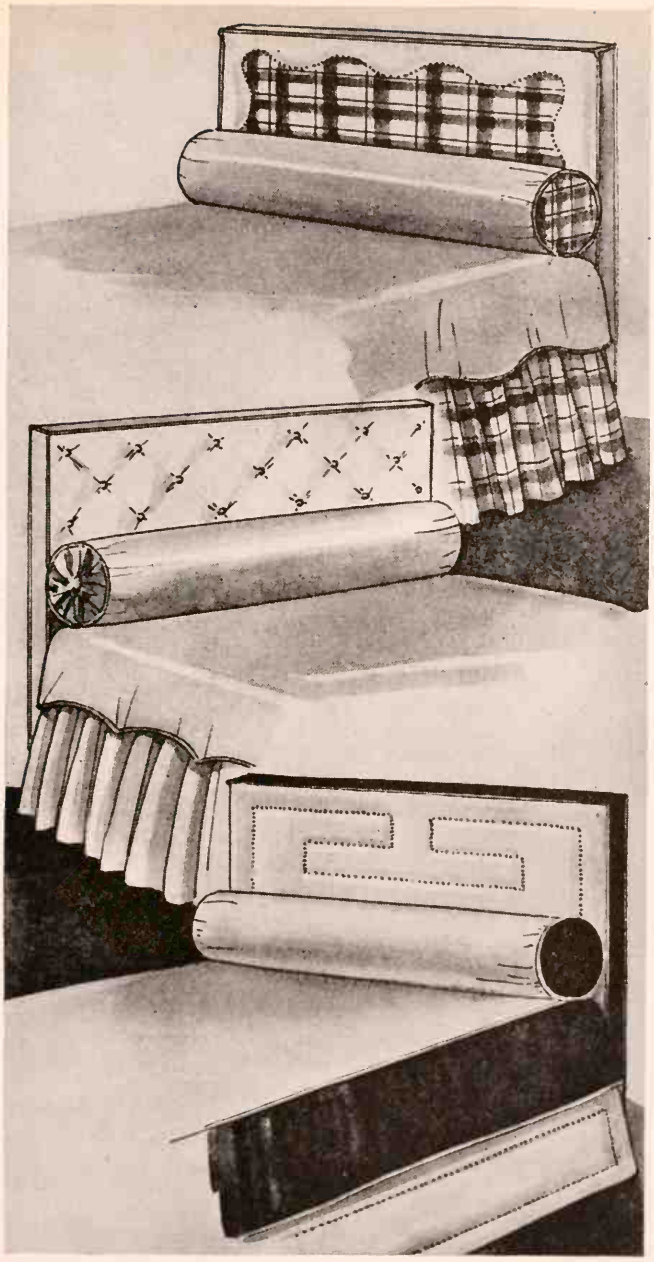
Satin-finish woven cotton is used for the second headboard shown on page 341. The quilter attachment is used for the tufted effect. The quilted stitching forms a big diamond-shaped design that is punctuated with satin covered buttons. The bolster ends are shirred with the gathering foot attachment, and accented with a big button at the center where the gathers meet.

For the third headboard, shown on page 341, white glazed chintz combined with any contrasting color is attractive. A conventional design is used for the front of the headboard with trapunto quilting made with the quilter attachment. If you want a special design, use a transfer pattern or make your own pattern. The outline of the pattern is first stamped or traced on a piece of muslin, then pinned or basted to the wrong side of the fabric with the stamped side up. The design is then outlined with one row of machine stitching. Cotton or heavy yarn is stuffed through the muslin between the stitchings.

Monogrammed Bed Linens

Even if you have never done much sewing, you can master the art of appliquéd monograms in an hour or so at one of the sewing centers in your community. Choose the size and type letters you would like to use, from a newspaper or magazine. Cut them out and from them make as many hard paper patterns as you need.

Use the color scheme of the bedroom as the color key. Choose a contrasting color for the appliquéd fabric monograms, or use the bedroom color for the letters and apply them with stitching of another color. The fabric should be fast color, preshrunk (page 284) and wash-



Decorator tricks with headboards are simple if the proper sewing machine attachments are at hand.

able, or the monogram may pucker, fade or run after the first washing.

Use smaller letter sets on pillowcases. Center the monogram about 1 inch in from the open end. Turn the edges ¼ inch in all around. Snip edges around corners where fabric is bulky. With the zigzagger attached to the sewing machine, stitch all around the edges. Use large monograms for sheets. Center them on the deep hem side and proceed as for pillowcases, or place the monogram in the corner to be turned back.

Gay Tablecloths and Napkins

Appliquéd borders are very easy to make with modern sewing equipment. Dress fabrics in 36-inch widths may be used for tablecloths, but it is necessary to seam two pieces together for correct width. The two pieces must be of equal width so that the seam will be centered. Clip off the selvedge edge and use for the center seam, stitching flat on the wrong side.* Use odd pieces of fabric for the border. Cut the strips in any width you prefer. Attach the zigzagger to the sewing machine and stitch the border on the cloth. Appliquéd designs attached with the zigzagger are very attractive, too. Tablecloths with fine corded edges are easily made with the cording attachment. The corder hugs the fabric closely around the cord and makes stitching easy. The cording can be worked in scalloped rows or even a Grecian scroll effect.

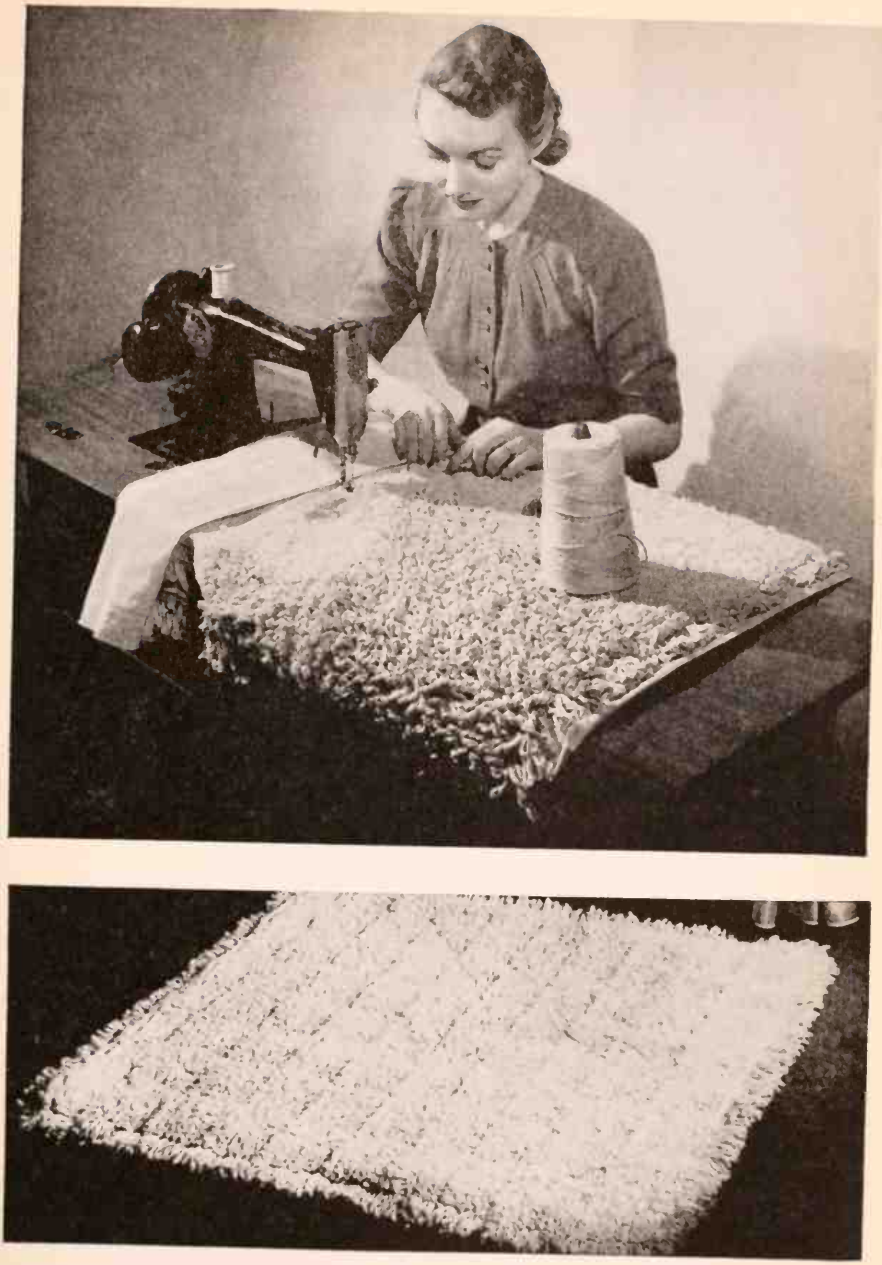
Use plaid gingham for a breakfast cloth. Measure the length and width of your table, and allow for a hang-over on all sides of about 12 or 14 inches. Make the napkins 12 inches square. Use the braider attachment to apply rows of contrasting bias tape. Start the first row about 1 inch from the edge and the next row two inches from the edge. Stitch flat on both edges of bias tape. Or use the pleater attachment to attach a 2-inch pleated ruffle all around the edge.

Tufted Rugs

Crash, duck, warpcloth or burlap are all suitable for the rug backing. For the 3 by 5 foot solid color rug shown on page 343, you will need four cones of Butcher's twine and about 2 yards of backing. The entire rug will cost well under $5 to make.

1. Wind the twine around the handicraft guide with the left hand.
2. Hold the twine and guide in place for stitching with the right hand.
3. Wrap a few winds of twine around the guide, starting from left

*Note: Selvedges should always be trimmed. They pucker when laundered.



A luxurious twine rug is easy and inexpensive to make if you have a sewing machine and a handicraft guide attachment.

to right, with the twine under the guide, thrown over the top and repeated.

4. After the guide is removed, make a second row of back stitching on the small loops to hold the nap more securely. Tack stitching at the end of the row.
5. For the second row of twine, place the guide so that the stitching will be as close as possible to the first row.
6. Repeat until the entire rug is covered, keeping the rows as evenly spaced as possible for a smooth nap and a uniform finish.
7. Turn the 3-inch hem allowance under so that the nap comes to the edge of the finished rug.
8. Turn under about 1 inch of the raw edge of the backing; stitch down by hand with heavy needle and thread, mitering corners.

SECTION FIVE

Control of Household Pests

Insects and other household pests are marvellously adaptable. An ant can live as happily in a skyscraper as it does in an orchard ant hill, and a bedbug may find a home in a penthouse. In short, being more simple-minded than man, these pests know where the next meal is coming from, and do not hesitate to walk up fifteen steel-girdered flights to get it, if necessary.

Human beings forget this simple law of insect nature. When a flying, crawling, biting thing gets into a home, the people who live there either feel blindly enraged at the landlord or the neighbors, or embarrassed and guilty that a bug should be there at all.

Neither of these attitudes will help the situation. Embarrassment, fear or squeamishness are almost dangerous, because any delay may allow a few invaders time to multiply until the infestation reaches serious proportions. When pests are found it is wise to get expert advice from a reliable pest control operator as to how serious the infestation is, and whether professional treatment is necessary. The operator may tell you that you can cope with the problem yourself. Eradication requires *persistence* above all else, so don't give up too easily. One application of spray or insecticide powder may not end an infestation.

Tested, specific control measures are known for almost every pest. If you intend to buy a proprietary product, it is best to check its composition, if you can, and its price against one of the known specifics mentioned in this chapter. Proprietary insecticides which do not list the active ingredients, which claim to be a cure-all, or which claim to contain a mysterious poison, are questionable, to say the least.

If you are not certain of an insect's true identity, and are unable to identify it among the following descriptions, ask a reliable pest control operator what it is. No charge is made for this service. If there is no pest control company in your vicinity, capture two or three specimens and send them to the Entomologist of your State Agricultural Experi-

ment Station or to the United States Bureau of Entomology. *Do not enclose them in a letter,* unless they are encased in a small metal box, such as an aspirin box, which will not be crushed in the mail. Otherwise by the time a letter reaches its destination the bugs will be dried out, crushed and broken, making identification extremely difficult if not impossible. The best way is to use a small glass jar with a screw-on lid. Fill the lower half with cotton batting, put in the bugs and fill the rest of the jar loosely with more cotton. Small pests, such as mites, should be put in a vial of rubbing alcohol. Screw on the cap securely. Label the jar with your name and address. Pack the jar carefully in a box with crumpled paper. Send a letter under separate cover, telling where the bugs were found and under what circumstances. Be sure to include your name and address.

INSECTICIDES

Sprays

1. *For Flying Insects* (except clothes moths)

All common household or fly sprays are designed to kill by contact. Therefore the spray or volatile mist must actually hit the insect or nothing is accomplished. Insects hit by the spray are smothered or paralyzed by the killing agent in the spray, and eventually die.

Most common household or fly sprays consist of a killing agent combined with an oil carrier. Kerosene, with its disagreeable odor and its tendency to stain is no longer used in modern sprays of this type. Instead, a mineral oil is used which is odorless, tasteless, harmless to food or persons and which will not stain. Perfume is often added to the carrier because it was found that the public did not like odorless sprays! Cedar, lilac, pine and wintergreen are popular odors. Perfumed sprays, while not harmful, may impart a foreign odor or taste to food, therefore food should be covered or removed before a room is sprayed. The new oil base does not present a fire hazard unless one is foolish enough to spray it over an open flame.

The quality of household or fly sprays has been improved tremendously in the past few years. Price is one indication of quality, and sprays costing twenty-five to fifty cents a pint are usually satisfactory.

Grades for fly sprays have been set up for the National Association of Disinfectant and Insecticide Manufacturers and many sprays are now labelled AA, A and B according to the Association's grading tests.

Household or fly sprays will not stain if the sprayed articles are not

rubbed while they are damp. Freshly sprayed areas may appear stained, but if left alone the dampness will evaporate. Unless a wall is soiled and droplets carry soil down with them and leave streaks, the sprays will not stain the wall. Follow directions given below.

Select a spray gun that produces a fine mist and does not squirt or splash. Cheap sprayers costing fifteen to forty-nine cents, for example, are only a makeshift. When there is a serious condition to be combated, it is wise to buy a brass or copper spray gun that has a continuous action. Such sprayers cost about $1.25 or more. Unfortunately many sprayers sold with insect sprays are inefficient and do not stand up under use. If you have a spraying attachment which is used with a vacuum cleaner, you will find that it gives excellent results.

How to Use Household or Fly Sprays

1. *Insects that fly* (flies, mosquitoes, etc.)

(*a*) Close all windows and doors.

(*b*) Point the sprayer toward the juncture of wall and ceiling. Do not aim directly at wall.

(*c*) Spray until the whole room is filled with a fine floating mist.

(*d*) Leave the room closed for at least 15 minutes.

(*e*) Sweep up all dead and paralyzed insects. Burn them.

2. *For Bedbugs:* Sprays intended especially for bedbug extermination are highly flammable if naphtha is used as the base. *The label always carries this information.* Sprays with a naphtha base must not be used if the room temperature is higher than 85° F., and must be kept away from any open flame.

Directions for using a bedbug spray are given on page 354.

Powders

Insecticides labelled "insect powder" must, according to Federal regulation, consist wholly of pulverized pyrethrum, and the label must declare the percentage of pyrethrins present. Pure pyrethrum contains only about 1 per cent of the active ingredient pyrethrin which does the actual killing, although it is harmless to humans and animals.

Roach powder may be a mixture of sodium fluoride (POISON) and inert substances such as talc, starch or chalk, or it may be 100 per cent sodium fluoride. One of the most common mixtures is 50 per cent sodium fluoride and 50 per cent pyrethrum. *All roach powders must be used with extreme caution,* because of the likelihood that they contain *sodium fluoride, a poison. Keep away from children and pets.*

In certain localities the law requires that sodium fluoride, which is normally a white powder, be colored blue-green as a safety measure.

How to Use Insect Powders: Dust, sift, brush or blow powder into all cracks and crevices, into openings around drain pipes and baseboards. Some manufacturers supply a "gun" for blowing the powder into cracks and crevices.

Insect powder must be kept dry and renewed frequently because it loses its killing power if damp or old. Sodium fluoride roach powders remain effective indefinitely.

Poison Bait

Food that has had poison added to it is sometimes used as bait for flies, ants, rats, mice, etc. Such poison baits are discussed in the sections of this chapter which are devoted to specific pests. The use of some baits is *highly dangerous* unless they are kept out of the reach of children and pets.

Fumigants

Fumigation is only necessary in cases of severe or general infestation. Some fumigants are deadly to human life as well as to insect life, and only carefully trained fumigators should use them. Laws are constantly being enacted to prevent their use by amateurs.

Hydrocyanic acid gas is one of the *most rapidly fatal poison gases* and its use presents grave hazards to human life unless expertly used. Because it is the nearest approach to an ideal fumigant, experts are trained to use it correctly. *No layman must ever attempt fumigation by this method.* In most localities this restriction is imposed by law.

Sulphur dioxide given off by burning sulphur has been almost entirely abandoned because results are so unreliable, and because it is highly injurious to foodstuffs, fabrics, wallpaper and metals. *Sulphur candles* are of no use in fumigation.

Carbon disulphide produces a poisonous gas, heavier than air, and extremely explosive and flammable. Its use is not recommended in buildings, because of fire hazard. Its fumes are poisonous.

The fumes from *moth crystals* are effective in specific instances. This form of fumigation may be carried on in the home with safety.

Safety Precautions

Poisons: Every care should be taken in handling poison materials. *The label should be read carefully and the antidote noted* before the poison is used.

Poisons should not be kept in the kitchen where they may be used by mistake in food preparation, or in the bathroom where they may be mistaken for medicine. Neither should they be used or stored where there is the slightest danger of children or pets getting at them.

PEST CONTROL FIRMS

Pest control operation has developed into a science in the last fifteen years. Reputable companies have sprung up, some of which employ full-time entomologists and technical men co-operating with government specialists. Such companies are constantly experimenting in order to develop practical methods for insect control. In all cases the competent pest control operator works closely with entomologists.

If your home is infested, or if you want the responsibility of pest control lifted entirely from your shoulders, you can employ a pest control company to do the work. If you arrange for regular visits over a definite period, the fees are small indeed, compared with your resulting peace of mind.

Several of these pest control companies maintain fumigation vaults for special piece work. When, by some sad misfortune, a bed, sofa, chair or other piece of furniture becomes infested beyond hope of home cure, you can send the piece to these fumigating vaults to be thoroughly and finally rid of its infestation. The cost is somewhat higher because of carting charges, but if the piece is valuable, putting the furniture back into safe and clean use is well worth the price.

In some large cities, there are Board of Health rulings which require a landlord and tenants to keep buildings free of vermin. The owners of many apartment houses have contracts with pest control companies. Operators from these companies make monthly or bi-monthly check-ups with tenants.

As a rule this maintenance service includes the extermination of only rats, mice, roaches, silverfish and vermin which are actually in the premises. They do not include moths or bedbugs unless the bedbugs have got into the woodwork. If your landlord has a contract with a pest control operator, you may have extra attention given to bedbugs or moths for a reasonable fee.

If you decide to turn your problem over to a pest control firm, how can you be sure to choose a reliable company? What claims made in their advertisements and sales literature are really important to you? The following suggestions will help you to make a wise choice:

How to Judge the Reliability of Pest Control Firms

1. If possible select a company that has done good work for and is recommended by some one you know.
2. Ask the company for references from hotels, hospitals, institutions, real estate groups, etc., concerning work in your community.
3. Check with your local Better Business Bureau and find out whether it has received customer complaints, and whether the company's business practices are ethical.
4. View price advertising with suspicion. Remember that inspection is necessary to determine cost, because cost depends on the size and condition of the building and the type of infestation.
5. View underselling claims with suspicion. No one firm can undersell competitors day in and day out.
6. View superlatives such as "Biggest" and "Best" with suspicion.
7. Don't be confused by mention of the U. S. Governemnt, however indirect such mention may be. Federal Government Agencies do not inspect premises, make contracts, endorse methods or materials, or give testimonials.
8. Distinguish between pest control "maintenance service" and such operations as a "clean-up," "one-shot job" or "fumigation." All of these services eliminate a present infestation and are therefore valuable, but when maintenance service is promised, periodic visits are made and additional materials or chemicals are used to prevent further infestation and to kill any pests that have found their way in after the original treatment. The property owner should be sure to know which service he is buying.
9. If a "guarantee" is given, find out what it entails, whether there are restrictions and for what length of time it is given.
10. Beware of the term "moth-proof" unless it is strictly qualified as to immunization against attack or reinfestation.
11. Find out whether the firm is licensed or qualified under state or city regulations, if any.

IDENTIFICATION AND CONTROL

Ants

It is all right to extol the ant as a symbol of industriousness and persistence as long as these qualities don't lead it indoors and into our cupboards! Unfortunately many species of ants invade houses and

while they aren't actually harmful, their very persistence makes them one of the most annoying of all household pests.

The first step in fighting an invasion of ants is to identify the species in order to apply the most effective means of combat. If you are in doubt as to the species, ask a reliable pest control operator, or send specimens to your state department of entomology for identification (page 345).

Pharaoh's ant is a tiny red ant that is one of the most common and troublesome of the species that gain entrance to houses. It lives beneath the floors and in wall spaces, and will eat any food but prefers those that are greasy.

The small *Argentine ant* is brown or nearly black with lighter colored thorax or legs. It is found throughout the South and in some sections of California, and is extremely destructive. It invades houses although the nest is out of doors.

The *black carpenter ant* is often more than half an inch long. It builds burrows in wood, and prefers sweet food.

The *thief ant* is yellowish in color and even smaller than Pharoah's ant. It lives out of doors and comes into the house only during the warm seasons of the year. It prefers meat and greasy food.

The little *black ant* is tiny and black. It nests in decayed wood inside the house or beneath pavings. It prefers food that is greasy.

The *pavement ant* is blackish in color. It builds its nest beneath brick, stone or cement pavings. This ant prefers meat for its food.

The *odorous ant* is black and, when crushed, gives off a pronounced odor something like that of rancid butter. It invades houses and prefers sweet food.

The large *yellow ant* is pale yellow, and is often seen in its winged form, which causes it to be mistaken for a termite. It lives in the soil under the basement or near foundation walls and emerges through cracks.

Winged ants may belong to any one of many species. They are the young male and female ants which develop wings during the mating season, and are often mistaken for termites. Termites, however, do not have the wasp-waist characteristic of true ants (see page 383 for full description of termites).

Control

Effective control depends upon locating the nest and introducing poison, so that the queens and the young are destroyed. Nests are

found in the house between floorings, in the walls, near foundation walls, behind baseboards, in decayed wood or in the soil beneath a basement floor. If the nest is in woodwork, an accumulation of sawdust will betray its presence. Out-of-doors nests are located in decayed wood, beneath paving or stones, or in the ground.

Trailing the parade of ants will usually lead you to the nest. If the nest cannot be located, powders or sprays must be used.

If the nest is out of doors and not too deep-seated, pouring *boiling water* into it will kill the ant colony. For deep nests out of doors, *carbon disulphide* is effective. This chemical can be purchased in drugstores. On exposure to air it forms a gas which is *explosive and flammable* in the presence of fire in any form. *Keep matches, lighted cigars and cigarettes, etc., away while using it.* If the ants are seen coming from a crack in the paving, pour 1 to 2 tablespoons of carbon disulphide into the crack and cover it with earth or sacking. The heavy gas which is formed sinks into the cracks and destroys the colony. If the nest is in the soil, make holes 2 to 4 inches deep and about 1 foot apart around the infested area. Pour 2 to 3 tablespoons of carbon disulphide into each hole, using a funnel, and push the soil together. (Grass will be killed unless the liquid is placed below the roots.)

If nests are in the woodwork, inject a teaspoon or tablespoon of *orthodichlorobenzene* (purchased in wholesale drug supply houses) into the small openings made by the ants, using a small syringe. Then close the openings with plastic wood or putty. *This chemical is an irritant and must be used with care.* The face, eyes, hands, etc., should be protected from contact.

If the colonies cannot be located, one of the following treatments may prove effective:

Sodium fluoride powder (page 347) dusted wherever ants are seen crawling, will sometimes drive them away. *This powder is poison—keep it away from food, children and pets. Do not use it in the kitchen!*

Borax, pyrethrum powder and derris powder distributed where ants will walk through the powder are often effective as repellents. The powders must remain dry and be renewed frequently. None of these powders is poisonous to humans or animals. Use any one of them in the kitchen when needed.

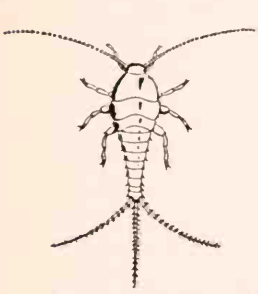
Fly sprays (page 346) will kill ants by contact but cannot be depended on to kill a colony.

Poison Baits: If poison bait is used, *every precaution must be taken to protect children and pets.* Place the bait in tin boxes with tight lids,

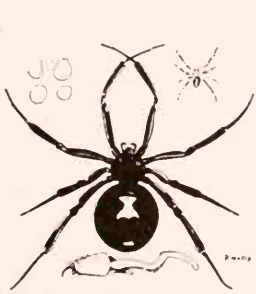
punch holes in the box just large enough to admit the ants. The poison is carried to the nest and the colony destroyed.

There are many *ant traps* on the market. Certain of these traps are effective if used according to directions. Some are designed so that pets cannot gain access to the poison bait.

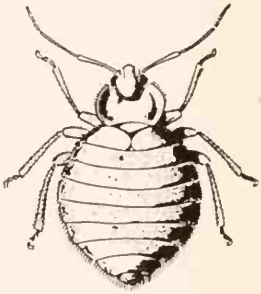
When an entire community is infested with ants, individual effort is more than apt to be ineffective. A unified campaign, under the direction of specialists in ant control, will usually result in successful eradication of the ants.



SILVERFISH



BLACK WIDOW SPIDER



BEDBUG

Bedbugs

For untold centuries the bedbug has been an unwanted companion to man. Through this long association the bug has learned man's habits, and shows great cleverness in avoiding his wrath. Man has always been its active enemy, and the bug, in consequence, has learned how to conceal itself during the day, venturing its attacks only under cover of darkness, unless driven by starvation to attack by daylight or in a lighted room.

The adult bedbug, before feeding, is flat, oval in shape, and brownish red in color. The abdomen is tinged with black. After feeding, the body lengthens and becomes bloated, taking on a brick red color from the blood the bug has feasted on.

An outstanding characteristic of the bedbug is its highly disagreeable odor, which is more noticeable when the bug is crushed.

Unfortunately bedbugs enjoy long life and great vitality, even under extremely adverse conditions. The blood of human beings is this pest's normal food, but if driven by hunger it will attack mice, rats, birds, etc. It can survive for at least a year without food, but the old idea that it

can subsist on dust has no foundation in fact. Temperatures low enough to check the activities of the bedbug may tend to lengthen its life.

The bite inflicted by the bedbug is poisonous to some individuals, producing a swelling, inflammation and intense itching. Other individuals are not sensitive to the bite and may never know that bedbugs are present unless they find a crushed bug or a stain on the bed linen. Peroxide of hydrogen soothes the irritation, and tincture of iodine may be used. Aromatic spirits of ammonia and vinegar both help to stop the itching.

The bedbug is a seasoned traveller and this trait carries it into the most carefully kept homes. It may attach itself to clothing and be carried to the movies, the subway, a train or almost any place you can think of. Suddenly it decides to drop off and remain awhile, or perhaps to attach itself to some one else's clothing. Thus it eventually establishes itself in a new home! Bedbugs migrate from empty houses or apartments to occupied ones, in their eternal search for food. Their presence should not be thought of as a reproach but rather as an incentive to quick action.

During the day bedbugs congregate in hiding places under mattress tufts, behind wainscoting, under loose wallpaper, or in various cracks and crevices in the wall, or in a wooden bedstead. But such is the cleverness of this bug, that it may travel some distance from the bedroom in order to conceal itself effectively until darkness falls.

Control

The quickest, most effective and thorough way to get rid of bedbugs is *professional treatment* by qualified experts (page 349).

There are other methods which are effective, but they all require a good deal of time, effort and persistence, because daily inspection and frequent applications of the insecticides are absolutely necessary.

Insecticide powders are restricted in usefulness because it is so difficult to introduce them into places where bedbugs are hidden.

Household insecticide sprays (page 346), if used as directed, are sometimes effective, especially if only one room is infested. Special *bedbug sprays* are also available (page 347). Direct the spray at close range into all cracks and crevices, behind loose wallpaper, around mouldings, on bedsteads and mattresses, etc. The application must be repeated after a week, whether bedbugs have been seen or not. The second application usually ends the invasion, but it is wise to make frequent inspections after this, and apply as often as necessary if any bugs are seen. A large

oil can is often more effective in applying the liquid than a sprayer, particularly for beds, bedding, etc., where a thorough wetting is necessary.

Book Lice

These tiny, weird grayish-white insects, called psocids by entomologists, are fairly common in houses, apartments, libraries, museums and other buildings in which they search for food.

The name book lice was given them because they are often seen on books. Often when a musty old book is open, the book lice can be seen scurrying in uncertain fashion over the pages. They appear to feed largely on moulds growing on wood, and on feathers, hair and straw, books, photographs and wallpaper.

This pest thrives in warm, damp or newly plastered rooms that have been closed up. They die in cold weather but the eggs which have been deposited hatch the following spring.

Psocids do not attack man or animals and are not especially harmful unless they are left undisturbed long enough to do serious damage.

Control

If only a few book lice are present, they can be eliminated by *cleaning and airing* the room thoroughly. The furnishings in the room should be sunned for several hours if possible.

If the infestation is severe, it is best to call in a reliable pest control operator. The breeding places must be located. Straw, feathers and hair should be suspect. After the source is removed and destroyed, thorough and repeated use of a household spray may eliminate this pest.

Carpet Beetles

(*Buffalo Bugs or Buffalo "Moths"*)

There are four species of carpet beetles which are sometimes called buffalo bugs or buffalo moths: the *common carpet beetle,* the *varied carpet beetle,* the *black carpet beetle* and the *furniture carpet beetle.* The adult beetle is less than ¼-inch long. All except the black variety have blackish or brownish bodies covered with small colored scales which form a pattern. The common carpet bettle has a reddish band down the center of the back; the furniture carpet beetle is mottled with patches of white, yellow and black, and is white underneath; the

varied carpet beetle is somewhat smaller than the other species, and is also mottled, but the colors are less bright. The black carpet beetle, as its name implies, is entirely black, with brownish legs.

The larvæ of all species except the black carpet beetle are oval. The larvæ of the common and furniture carpet beetles have white bodies covered with black bristles. The larva of the varied carpet beetle is tawny and brownish. All three species have three tufts of bristles at each side of the rear end of the body. The larva of the black carpet beetle is golden, chocolate brown or tawny, and is elongated, having a tuft of long brown hair at the end of its body.

Only the larvæ are destructive. They feed on wool, particularly rugs or carpets containing wool; hair, bristles, fur, feathers and other animal substances. They can exist on flour or meal.

The adult beetles can fly easily and like daylight and sunlight. The female lays its eggs in floor cracks, around baseboards and in wool clothing or furniture upholstery. As soon as the eggs hatch, the young larvæ begin to feed and cause an increasing amount of damage until they change to the pupal stage, from which they emerge as adult beetles. This growth takes about a year, and during this time the larva sheds its skin 6 to 10 times or even more. The "shells" are therefore very numerous, and when they are discovered it is quite natural that the infestation should often appear more severe than it actually is.

Control

Control is difficult because the larvæ, unlike the adult beetle, avoid the light and hide in dark places during their feeding period. Stored clothing, the edges of carpets and rugs, the pile of fabrics or furniture, floor crevices, etc., are ideal hiding places. Wall-to-wall carpeting or tacked down carpeting is extremely subject to attack because it is left undisturbed for long periods.

This habit of concealment makes control even more difficult than the control of clothes moths. Prevention is always easier than cure. The underside of rugs should be thoroughly cleaned, frequently and regularly. Any cracks in floors or baseboards should be filled. Dust and lint should not be allowed to collect on rugs, floors, upholstered furniture, in floor cracks, pianos, radios or on wool clothing. Frequent *vacuuming* or *brushing* of rugs, furniture and clothing, together with occasional *sunning* in the open air are good preventives.

The molting habits of the larvæ also make control difficult. When they are ready to molt, or to transform into the pupal stage, they crawl into hidden spots which are not disturbed during the ordinary housecleaning routine. After molting, they return to the source of food and

eat voraciously. This explains the mystery of finding larvæ or beetles several days after a room has been fumigated or sprayed.

Professional treatment by a reliable pest control operator is the surest means of ridding the house of an infestation.

Centipedes
(*House*)

The house centipede is an uncanny looking creature, with a dark-striped grayish yellow body about an inch long, fifteen pairs of long legs, and long slender antennæ. The last pair of legs is much longer than the others, often more than twice the length of the body. It darts across floors and up walls with great speed.

It lives in damp places such as bathrooms, basements and damp closets, and feeds on flies, roaches and other insect pests found in houses. If it were not for its weird appearance and unpleasant habit of darting at people, it would probably be welcome as an efficient exterminator of pests more harmful than itself.

The house centipede seldom bites human beings, and then only in self defense. When this occurs, swelling and pain may result. Ammonia applied to the bite will soothe and relieve these symptoms.

Control

Fresh *pyrethrum powder,* sprinkled lavishly in damp places where the house centipede is seen is one of the control measures recommended for this insect. This treatment must be repeated at frequent intervals because this powder must be fresh to be effective. Frequent inspection of such places, and destruction of all centipedes that are seen, are important.

Cockroaches
(*Croton Bugs, Water Bugs, Water Beetles, etc.*)

House roaches in the temperate zone include the Oriental, German (Croton bug) and American. All house roaches are similar in appearance, but vary in size. They also vary in color from light to dark brown, and have thin flat bodies. Some species have well-developed wings.

Their jaws are strong, allowing them to feed on all kinds of substances. They are particularly fond of dead animal matter, cereal and other food products, but they will gnaw woolens, leather and bookbindings as well. Cloth book covers are often damaged by cockroaches because these pests eat the paste or sizing in the cover.

In houses, roaches invade pantries, kitchens and warm, dark, damp places such as drains and plumbing fixtures. They hide in the daytime, concealing themselves in cracks and crevices and behind baseboards or furniture, coming out to forage for food after dark. When discovered, they scurry away at great speed, and are almost certain to avoid capture or destruction.

Often the extent of their invasion is not realized unless one enters a dark kitchen at night, hears a rustling noise and switches on the light. Then hundreds of roaches may be seen, hurrying into hiding places.

Roaches soil everything with which they come in contact. They leave behind an offensive disgusting odor which only soap and boiling water will remove. Tainted food supplies cannot be reclaimed, and contaminated dishes retain the odor to such an extent that foods or liquids served in them have a foreign taste which is extremely disagreeable.

Roaches are often brought into a house with groceries, furniture and other supplies. They also migrate from quarters they find unsatisfactory to a more favorable location. They often travel via the water pipes and hence the names "water bugs" and "water beetles."

Control

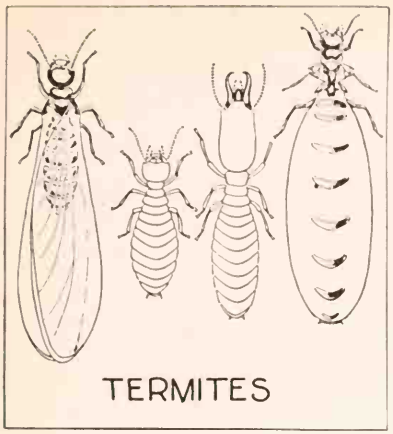
Some infestations are not easy to control, and for this reason it is often wise to consult a reliable pest control operator and get his advice as to control measures.

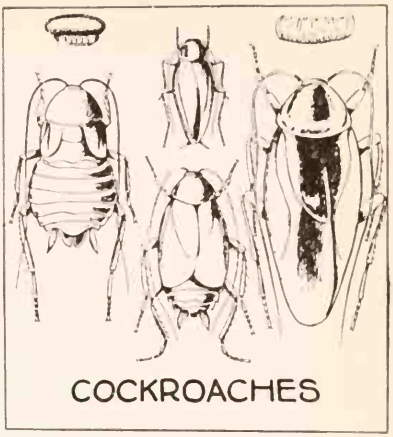
Sodium fluoride (POISON) is one of the most effective measures. Infested areas should be dusted with this powder. Since it also poisons humans and animals, it must be kept away from direct contact with food, and out of the reach of children or pets. A mixture of equal parts of *pyrethrum powder* and *sodium fluoride* is very effective.

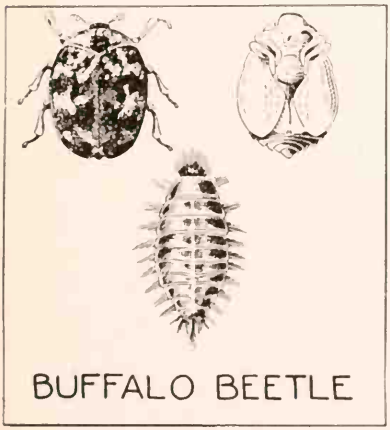
Borax, which is comparatively non-poisonous to humans and animals, has been used with some success, either plain or combined with *pulverized chocolate,* using 1 part borax to 3 parts chocolate, and sprinkling liberally wherever there are signs of infestation. A mixture of equal parts of borax and *powdered sugar* is sometimes effective.

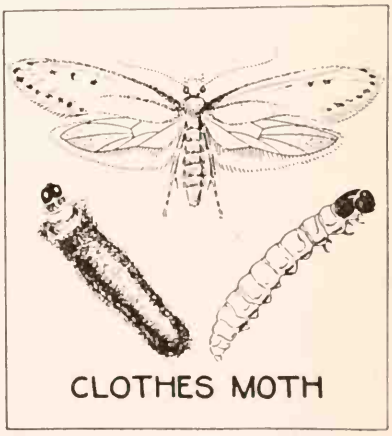
Pyrethrum powder, if fresh and if used persistently and liberally, will bring considerable relief. Often it merely paralyzes the roaches instead of killing them, and all dead or paralyzed roaches must be swept up and burned.

Phosphorous paste (POISON) is also an effective remedy. *All phosphorous pastes are deadly poison if taken internally* and we do not recommend having them in the house.









All four of these pests are destructive. Termites destroy wooden buildings; cockroaches contaminate food and dishes; the Buffalo beetle or carpet beetle and the clothes moth destroy certain fabrics.

Professional treatment (page 349) is always necessary in cases of severe infestation.

Crickets

The house cricket is pale brown and measures about ¾ inch in length. Its close relative, the field cricket, is black. Both types feed on

almost any organic substance, and often severely damage fabrics of all types.

Crickets like warmth and often invade kitchens, basements, fireplaces and chimneys in cold weather. During the summer they live out of doors.

Control

If crickets invade the house, the use of fresh *pyrethrum powder* or *sodium fluoride* (POISON) blown liberally into hiding places is usually effective.

Fleas

The flea is both troublesome and dangerous, because it carries and transmits several diseases to man.

There are three types of fleas that are serious pests in this country: the dog flea, the cat flea and the human flea. The dog and cat fleas are similar in appearance and each will attack both dogs and cats; they sometimes invade houses in the Eastern States. The human flea lives on many different animals, such as rats, mice, dogs, cats and certain wild animals, and is most abundant in the Mississippi Valley, Texas and the Western States.

Fleas subsist on the blood of birds or animals, and can live several weeks without food.

This pest often breeds in great numbers in basements, barns or other buildings where dogs and cats are kept. The fleas originate in the sleeping quarters of these animals, breed prodigiously, and eventually may invade the whole building, particularly houses that are closed for the summer.

Control

Animals, and the places and bedding where they sleep, should be kept free of fleas if infestation is to be avoided. Dogs and cats should have *derris powder* applied next to their skin occasionally. If they run free, the treatment must be given every two weeks or oftener. This powder, or commercial preparations containing it, can be purchased in drugstores, seed stores and pet shops. One level teaspoon of derris powder will kill every flea on a large dog. It is applied by rubbing it into the coat, working down from the head. The insect-killing power of derris powder depends on the amount of rotenone it contains. Most derris powders contain 4–5 per cent of this substance and can be diluted with talcum powder to bring the rotenone content down to 1 per cent. The fleas do not die immediately, as derris powder kills them slowly.

Pets' sleeping quarters should be sprinkled liberally with the powder.

Fresh *pyrethrum powder* (page 347) may be used instead of derris powder. Pyrethrum powder is not poisonous to domestic animals, and derris powder only slightly so; it should not be dusted near the eyes, as it causes them to swell.

If fleas infest basements, outbuildings, etc., the floors of the infested areas should be sprinkled liberally with a mixture of equal parts of *"para" crystals* (page 369) and *naphthalene crystals*.

If fleas are discovered in human living quarters, naphthalene crystals should be sprinkled liberally over the floor and on all over-stuffed furniture on which flea-ridden animals may have slept, using at least 1 pound per 100 cubic feet. The rooms should then be closed up for 24 to 48 hours. Another method is to spray the room thoroughly with *fly spray* and close it up for an hour, repeating within three days.

Professional treatment (page 349) will end a severe infestation, if given by a reliable pest control operator.

Sometimes a flea infestation spreads to the lawn. After the breeding place is discovered and treated, the grass should be cut, and kept cut, because rain and sunshine will kill the fleas.

Flies

The Housefly

Although houseflies are perhaps the commonest of all pests, they are also the most dangerous, because they transmit such dread diseases as typhoid, tuberculosis, cholera, diarrhea and dysentery. They also are carriers of parasitic intestinal worms.

The eggs of the housefly are laid in rotting animal or vegetable matter and the excrement of humans, animals and chickens. Furthermore the adult fly returns again and again to places where such filth exists. After such trips flies enter houses, attracted by food and warmth, and spread the germs that are carried on their hairy legs and feet, or in their digestive tracts. Food and dishes may thus become contaminated.

Houseflies hibernate in houses during cold weather, and those that live through the winter revive during the first warm days.

Control

The first step in fly control is *cleanliness* in and around the house, and sanitary disposal of sewage and garbage. Sometimes it is necessary to enlist the entire community in an effort to eliminate refuse piles and rubbish, and to establish proper care of stables, and hygienic treatment of manure.

All windows and doors of houses should be *well-screened* with 16-mesh wire screening, and all screen doors should open outward. Torn screens should be mended at once.

The use of a *fly spray* is an effective method of killing houseflies (page 347).

Sticky *fly paper* and *fly swatters* may prove effective in destroying small numbers of flies.

Poisons are dangerous to use in homes where there are children or pets.

Blow Flies and Bottle Flies

These species are large, noisy, and easily identified by their metallic blue or green color. They are transmitters of disease.

They enter the house in spring and summer, and will lay eggs on any meat that is not closely covered.

Control

Same as housefly (page 361).

Cluster Fly

This fly is dark gray, and larger than the housefly. It is sluggish and easily caught except in hot weather. During the summer these flies live outdoors, but with the approach of cool weather they make their way into houses and cluster in dark corners, in closets, attics and unused rooms. They are not attracted by food, but they are a nuisance because they soil wallpaper and woodwork. They buzz noisily around sunny windows or electric light bulbs.

Control

Screens are of little use because cluster flies crawl through cracks beneath clapboards and shingles, in window casings, etc.

Fresh *pyrethrum powder* dusted over the clusters of flies will paralyze and kill them. *Fly sprays* (page 346) are also effective.

Fruit Fly

This tiny reddish brown fly breeds and lays its eggs in decaying fruit, fermenting liquids, preserves, pickles, empty beer bottles, drinking glasses, etc.

Control

Screens do not keep the fruit fly out of the house. Overripe or decaying fruit should be destroyed, and preserves and pickles tightly

covered. Soiled bottles and glasses should be well rinsed shortly after use.

Fly sprays (page 346) are effective.

Latrine Fly

This fly acquired its name because it breeds in human excrement. It resembles the lesser housefly in appearance and is a transmitter of disease.

Control

Outdoor toilets should be kept in sanitary condition. Control measures recommended for houseflies (page 361) are effective.

Lesser Housefly

This species is smaller than the housefly, and is marked with three stripes instead of four. It breeds in garbage and human excrement, and transmits disease. It enters the house in spring and early summer.

Control

Same as housefly (page 361).

Stable Fly

This fly is larger than the housefly, which it resembles, and lives outdoors, coming into the house only in dull or stormy weather. It has a short piercing mouthpart and bites both animals and man.

Control

Same as housefly (page 361). Sticky fly paper and poison baits are of little value.

Lice

The Head Louse

Unfortunately head lice are no respecters of persons. The cleanest and most fastidious of us may be "victims of aggression." School children are apt to acquire head lice, because these pests crawl from one hat to another in crowded cloak rooms, and because little girls love to try on each other's hats. Unless the offenders are noticed almost at once, a serious infestation may result, because a female louse will lay as many as 300 eggs, each tightly cemented to a hair, and the eggs hatch in about 7 hours.

Control

Get a physician's advice as to effective treatment. Of course hats worn during the infestation should be sterilized or destroyed.

The Body Louse

Luckily it is extremely rare that people in ordinary walks of life acquire body lice. Nevertheless extremely fastidious people are sometimes victims through no fault of their own.

There are two species which feed on human blood—the body louse and the crab louse. The body louse is a disease carrier, spreading typhus, relapsing fever and trench fever, while the crab louse causes irritation and fever. Therefore prompt and drastic measures are in order the moment an attack is discovered.

Control

Ask a physician to prescribe treatment. The hairy parts of the body should be closely shaved to retard or avoid reinfestation. Frequent hot baths and changes of clothing are essential during treatment.

Clothing and bedding should be sterilized by steam or by boiling. Woolen garments should be soaked in a 2 per cent solution of lysol, then washed in soapy water. A hot iron used on outer garments, particularly along the seams, is effective. If the garments are not made of wool, silk or rayon, they may be placed in an oven heated to 130° F. or more, and left for at least 30 minutes.

Mice and Rats

The House Mouse

This common pest is too well known to need description. Its food habits correspond closely to man's, and it will eat all kinds of food, soap, garbage and other refuse. It will gnaw through wood to get at food, and is destructive in its attempts to get the softest possible materials with which to make a nest.

It finds its way into the house through openings where pipes enter the building, torn screens in basement windows, ill-fitting doors, etc. Cold weather drives it from fields and meadows into houses where warmth and food are assured. It forages at night and hides during the day. As the mouse is a great traveller, no infestation is permanent. However, another infestation may follow close on the heels of the first, and eternal vigilance is necessary.

Control

The first consideration is *blocking all means of access.* Small cracks and crevices should be repaired, doors should be made to fit tightly, basement windows should be closely screened, etc. Food supplies kept in covered metal containers are impervious to attack. Cupboards should be tightly closed. Garbage and rubbish of all kinds should be placed in covered metal containers until destroyed.

The common wooden *snap trap* is the best mouse exterminator, if properly baited. Plenty of traps must be used, placed strategically in and around the infested area. A dozen or more traps may rid the house of mice in a single night. The traps should be placed with the bait nearest the wall. Boxes may be placed near the wall, to form a runway, and the traps placed in this runway.

Contrary to opinion, cheese is not as popular with mice as certain other bait. Freshly fried bacon, oil-packed sardines, peanut butter, or a paste of rolled oats and peanut butter are all excellent. A mixture of peanut butter, rolled oats, chopped raisins and a drop or two of aniseed oil is irresistible. The bait should be tightly pressed on the trigger, and the trap should be set so that the trigger is released at the slightest touch.

The use of poison bait by laymen is not recommended. Pest control operators are familiar with the proper preparation and distribution of poisoned baits, and should be called in to cope with any severe rodent infestation.

Cats are the natural enemies of mice unless they are lazy or overfed, or lack the hunting instinct. A cat that is a good mouser should be encouraged in this virtue.

The Brown or House Rat

No one has ever found a single redeeming feature to justify the existence of rats. They are disease carriers, they are extremely destructive and they are filthy in their habits. They invade houses, stores, barns, warehouses and markets, and besides attacking all kinds of food they destroy fabrics, leather, woodwork and building foundations. On farms they destroy poultry and eggs.

The common rat has acquired many names—Norway rat, brown rat, barn rat, gray rat, wharf rat, sewer rat, ship rat and river rat. These aliases point out vividly the rats' adaptation to civilization. The only other species in this country is the black rat, which inhabits the Southern States.

Like mice, rats are dependent on man for their existence, and have

followed him wherever he has gone, even across oceans and continents. They breed all the year around, and multiply at an unbelievable rate.

Control

Cutting off the rat's food supply is the surest way of getting rid of him. Before any method of extermination is attempted, the food rats have been eating must be put beyond their reach. The next step is to cut off their supply of water. Under ordinary conditions rats get water at sinks, watering troughs, leaks in the plumbing, etc. The location of any source of supply that cannot be shut off is a good place to set traps.

Garbage must be kept in closely covered metal containers.

All openings, such as places where pipes enter, should be closed. Ratholes, if found, should be stopped up with concrete or broken glass.

When rats overrun an entire community, civic and health authorities must enforce sanitary measures.

Traps of the coiled spring snap type are useful for exterminating small numbers of rats, as a final measure when infestation has been cleared up by other means.

Bait should be tied securely to the trigger for best results. Some food which is not available elsewhere should be selected as bait. Bacon, sausage, fresh bread or cake, or a piece of fresh fruit are all attractive to rats. All other food should be made completely inaccessible, if the traps are to be effective. Traps should be cleaned after each use to eliminate the human odor which might scare off the next victim.

Rats run along the wall, and traps should be set between the wall and a row of boxes, as for mice (page 365).

Rats are intelligent enough to be suspicious of traps. To allay their fears, sprung traps may be left in place for several nights, and bait scattered around. Then the traps can be set with the same bait and the rats will be caught.

Be sure to set plenty of traps if you want results.

Poison bait is dangerous to humans and pets. Carelessness has resulted in many heart-breaking tragedies. Certain poisons are very effective, but their use by laymen always involves the danger of rats dying in inaccessible spots in the building. The resulting stench can make a building uninhabitable for some time. Pest control operators know how to select, prepare and distribute poison bait so that the problem of odor becomes almost negligible.

Poison stations are safe in most cases. A sturdy box, turned upside down, with holes at the sides and ends just large enough to admit a rat, makes a good station. The bait is placed inside. Many small baits are more effective than a few large ones; 1 teaspoonful is enough for 1

bait. Uneaten bait must be burned or buried so deep that animals cannot get at it.

Red squill is the safest rat poison, and the only one which should be used by laymen. Even in this case, food poisoned with red squill must be kept out of the way of children and animals. If ground meat, fish or cereal is used as bait, the proportion is 16 parts bait to 1 part red squill.

Many commercial rat poisons contain deadly poisons and must be used with extreme care and exactly as recommended by the manufacturer.

Professional treatment (page 349) by a reliable pest control operator is necessary in cases of severe infestation.

Mosquitoes

Mosquitoes are carriers of such dread diseases as malaria and yellow fever. They breed in water and the adults prefer to live in heavy vegetation such as weeds, tall grass, shrubbery and vines. Only female mosquitoes bite.

During the winter, adult mosquitoes hide in protected places in basements, unused rooms, outbuildings, drain traps and sewers.

Control

Elimination of breeding places is the first essential. Mosquitoes breed around houses in tin cans, bottles, jars which catch and hold water. Eaves, troughs and flat roofs that do not drain properly, cesspools and septic tanks that are not tightly covered, uncovered rain barrels or tubs, open cisterns, water troughs and puddles under the house, and untended bird baths are also ideal breeding places. The remedies for these conditions are obvious.

A tablespoon of *kerosene* thrown into a barrel holding water that is not used for drinking will destroy the "wigglers" which hatch from the eggs 24 hours after they are deposited. This treatment must be repeated every 2 or 3 weeks. A handful of *borax* added to water stored for dishwashing or laundering purposes will kill wigglers and does not lose its killing power as kerosene does.

Drain traps should be treated with kerosene at least every 2 weeks. Cesspools should be sprayed with a pint of used motor oil and kerosene in equal parts every 3 to 4 weeks.

Mosquitoes will not breed in ornamental pools that are well stocked with goldfish or minnows, if the fish are not fed, and if vegetation in the pond is not allowed to become dense.

Polluted ponds, streams, lakes, salt marshes and sewage systems are the responsibility of the community, not of individuals, and this problem can be solved only by concerted effort.

Screens of 16-mesh wire cloth will keep mosquitoes out of the house. Screen doors should open outward. Chimneys and open fireplaces should be screened.

Fly sprays are effective when mosquitoes get into a house (page 346). Various repellents which are applied to the skin will prevent attack for a few hours only.

Moths

The clothes moth has been called Household Enemy No. 1, and with good reason, for every year the damage done by the larvæ of the clothes moth is estimated at about $200,000,000.

There are three species of clothes moths: the *webbing* clothes moth, the *case-making* clothes moth and the *tapestry* moth. The adults, called moth millers, are tiny winged insects, varying from straw color to dark buff. They are seen flitting about the house from May to July, in September and October, and in steam-heated houses during January and February. Every one that is seen should be killed or its eggs will shortly be deposited on or in woolen fabrics, felt, furs, hair and feathers. Moths do not destroy cotton, silk, linen or rayon.

Millers shun the light and seek out a breeding place that is dark, warm and quiet. Stored clothing, deep recesses in upholstered furniture, rugs in dark corners or under low furniture and wool in a darning basket are all ideal breeding places from the moth's point of view. The eggs usually hatch within four to eight days of the time they are laid. As soon as the tiny white worm-like larvæ emerge from the eggs they begin to feed voraciously. If they do not find themselves surrounded by some source of food, they travel with unerring instinct to the nearest supply. This destructive period lasts from a few weeks to more than a year, depending on feeding conditions and temperature. Ideal conditions shorten the period. Eventually the larvæ build cocoons and in 8 to 10 days emerge as millers.

Control

Prevention of moth infestation is extremely important, because once an infestation gains a foothold, the battle is long and hard.

Cleanliness, sun and *air* are the moth's natural enemies. Frequent brushing, washing and dry cleaning of woolen garments, plus sunning and airing, will discourage attack. Frequent and thorough vacuum

cleaning of rugs, furniture and draperies, with particular attention to concealed areas, is extremely important.

Articles in constant use do not need to be treated against moth damage.

Articles in infrequent use should be thoroughly brushed, sunned and aired at least every two weeks.

Articles to be stored—see page 376.

Professional advice from a reliable pest control operator is of great value, because an infestation may often be more serious than it appears. If professional treatment is not necessary, the operator will tell you so and you can undertake the battle yourself.

Moth-destroying Preparations

There are *crystalline chemicals* (naphthalene and paradichlorobenzene) which destroy moth eggs and larvæ. The fumes given off by sufficient quantities of these chemicals, *if confined to tightly closed closets or other containers,* are fatal to moth larvæ in any form.

There is a popular misconception that certain odors are moth-repellent. This is a fallacy which accounts for needless moth damage. The *odor* of red cedar, tar paper, moth crystals, pine, lavender, spices, etc., will not repel moths. The *fumes* given off by moth crystals and cedar will destroy moth life, if these preparations are used in sufficient quantity (1 pound per 100 cubic feet of closed space). Lavender, spices and herbs in any form are worthless in moth control.

Moth crystals (paradichlorobenzene and naphthalene) may be purchased in drug or department stores, under their own names or various trade names. These products are sold in flakes, crystals of various sizes, balls, cakes and in perforated containers. They may be colored or perfumed. When sold under trade names the prices are usually much higher. Differences of as much as fifty cents a pound have been found between paradichlorobenzene as such, and the same product marketed under a trade name.

Colors and perfumes add nothing to the effectiveness of such products. Crystals compressed in cake form do not vaporize rapidly enough to do any good, a fact you should remember when tempted to buy moth cakes in perforated containers.

Paradichlorobenzene, often called "para," is an extremely effective moth killer when used in sufficient quantity. Its action is more rapid than that of other chemicals, it does not deliquesce (take up water from the atmosphere and melt), and its odor does not cling. After garments have been stored with para, they should be aired. If they are put on before airing they may make the wearer's skin burn and itch.

Naphthalene crystals or flakes are also effective in moth destruction. These crystals evaporate more slowly than para. They are cheaper than para crystals and are used in the same way.

How to Use Moth Crystals

1. Articles to be stored should be laundered or dry cleaned if possible. If not, they should be thoroughly brushed and hung in the hot sun for several hours.
2. When moth crystals are used in trunks, chests or boxes, they may be placed in cotton mesh bags or between layers of tissue paper and distributed through the container (page 378).
3. If a closet is to be used for storage, vaporize moth crystals as directed on page 378, or scatter them thickly on the highest shelves.
4. Seal the container or closet with fumigator's tape.
5. If articles are stored over a long period of time, renew the moth crystals as soon as the original supply has evaporated.

Moth Sprays

There are sprays on the market which kill moth larvæ and eggs and others which make fabrics uneatable as far as moths are concerned, if used correctly. The latter sprays penetrate fabrics and actually become part of the fiber. It is extremely important that the fabric be thoroughly wet with the spray.

How to Use Moth Sprays

Upholstered Furniture

1. Do not use sprays on silk, sateen, cotton, linen or rayon, or on colors that are not fast to water.
2. Brush thoroughly or clean with vacuum cleaner attachment.
3. Remove cushions. Cover all cotton surfaces with heavy cloth or paper. Protect wood surfaces with paper or a light film of furniture polish or oil.
4. Apply spray evenly to upholstery, in a fine mist.
5. Do not touch upholstery until it is thoroughly dry.
6. Use at least 1 gallon of spray for every 3 pieces of upholstered furniture (davenport and 2 chairs).
7. The spray treatment must be given each year.

If stuffing is moth-infested and the fabric is being eaten from the inside, spraying is not effective. This problem is discussed on page 375.

Rugs

1. If colors are not fast to water, do not use spray.
2. Spray both sides of wool-back rugs. If the rug is sized underneath, spray only the right side.
3. Use 1½ gallons of spray for a 9′ x 12′ rug.
4. The spray treatment should be used in the spring and fall.

Clothing

1. Do not use sprays on furs, linen, silk, cotton or rayon, or on colors that are not fast to water.
2. Brush garments thoroughly, giving special attention to seams, pockets and cuffs.
3. Knitted garments should be cleaned before spraying.
4. Spray until every inch of the garment is thoroughly wet.
5. Spray unlined garments on both sides. Be sure seams, folds, pleats, pockets, cuffs, etc., are not overlooked.

Fly Sprays (page 346) are very effective in killing moths on furs, woolens, rugs, etc. Spray lightly on all sides from a distance of 3 to 4 feet. Let dry thoroughly before touching or storing.

Moth-Proofing Rinses

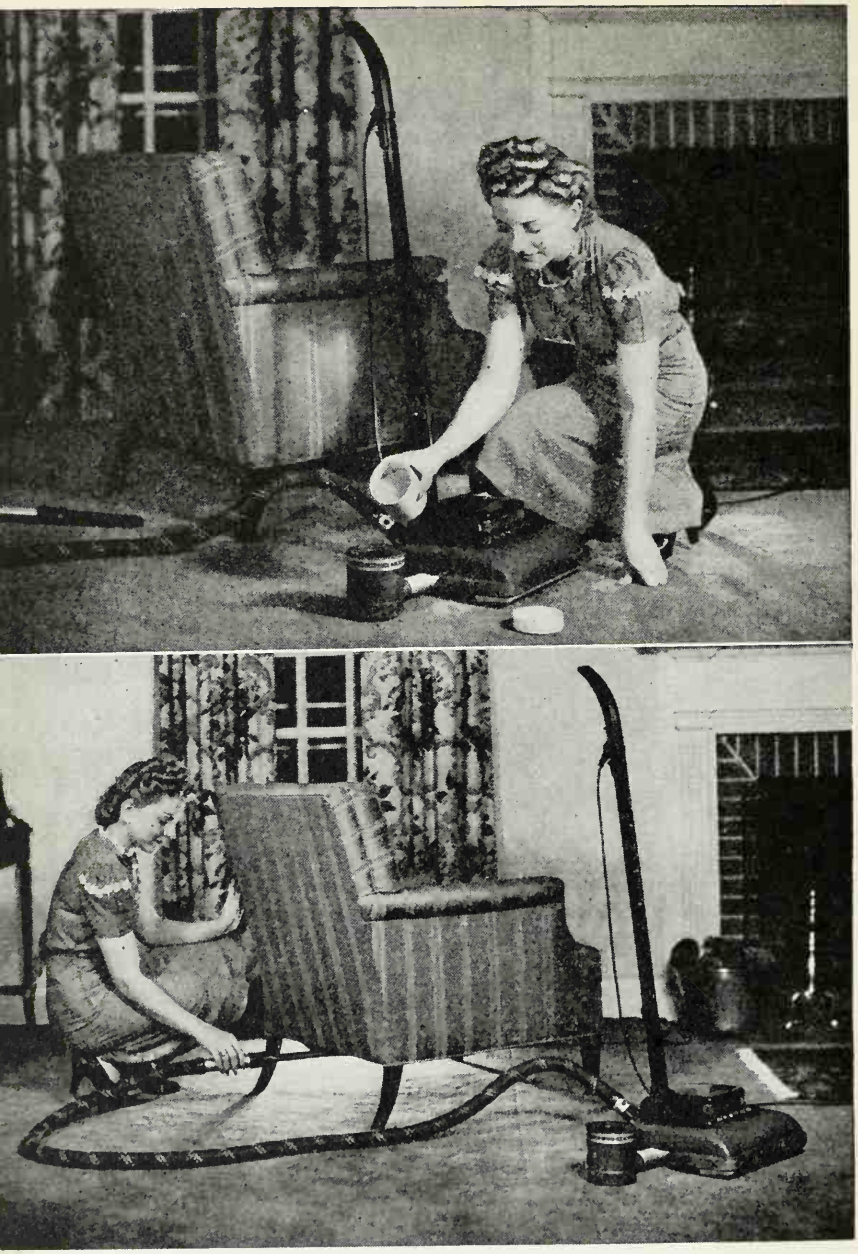
Any washable woolen article may be made resistant to moth damage with a reliable compound which is added to the last rinse water.

After the articles are washed and rinsed, dissolve the moth-proofing compound in clear water and let the articles soak in this water for a short time.

This treatment will prevent moth damage until the garments are washed again, as the fibers are no longer attractive to moths as food.

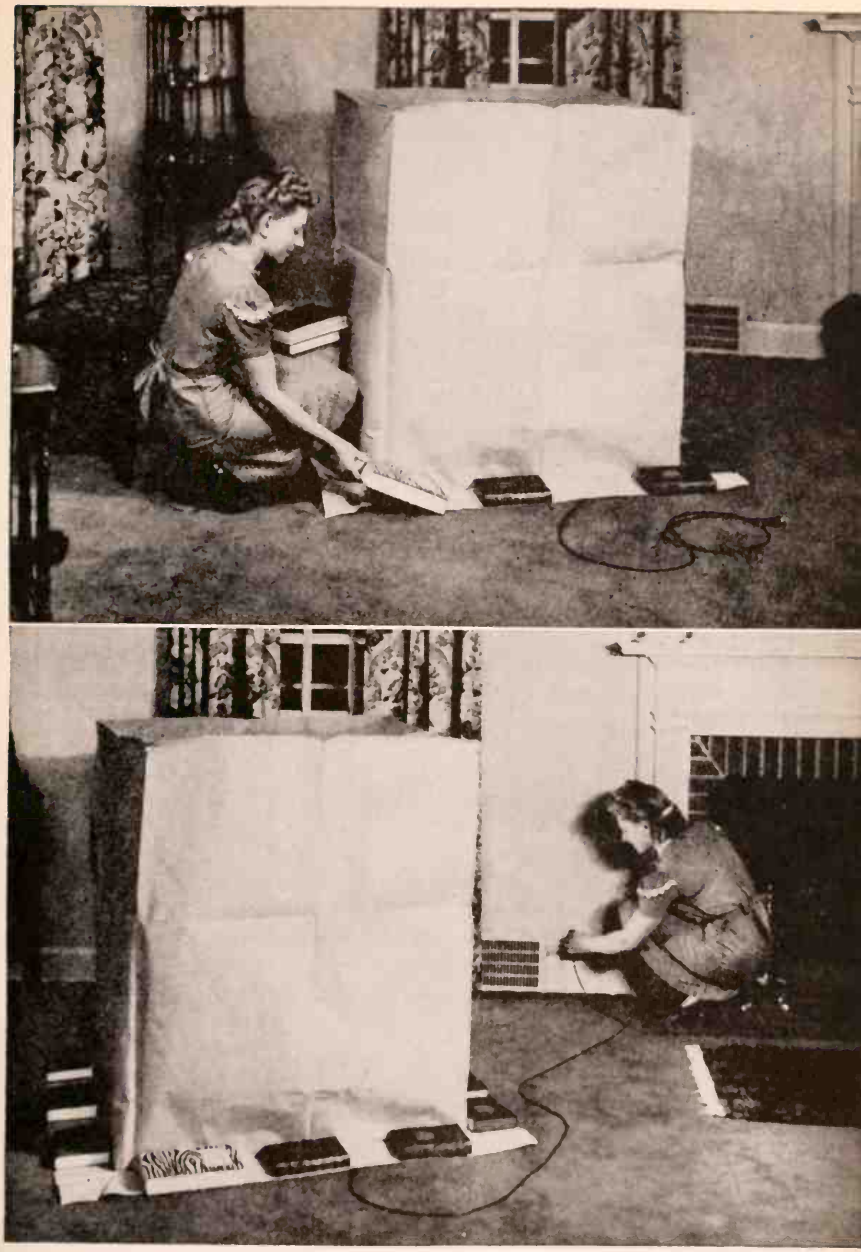
Moth Fumigants

Fumigation of a single room, closet, chest or box is effective if correctly done. It is important to use a safe fumigant such as paradichlorobenzene or naphthalene crystals in sufficient quantity.



STEPS IN FUMIGATING

Top left: Fill container with "moth crystals."
Lower left: Insert flat tool attachment in slit in upholstery.



UPHOLSTERED FURNITURE

Top right: Cover the chair with heavy paper weighted down with books.
Lower right: Attach the vacuum cleaner and let the motor run for the prescribed length of time.

Moths in Upholstered Furniture

Certain types of upholstered furniture are extremely attractive to moths. Wool or mohair fabric, and stuffing made of animal fibers (hair, wool or feathers) are all attractive food for moth larvæ, and the wily moth miller deposits her eggs on the fabric or in the stuffing, so that when the larvæ emerge they will find themselves well supplied with food.

In cheap upholstered furniture, the layer of cotton felt just under the upholstery fabric may be thin, or there may be gaps in it so that moths can easily penetrate it and get at the hair or feathers beneath. The bottom of the furniture should be thoroughly covered with some fabric which moths will not eat, so that the miller cannot enter at openings where the legs join the frame. When you are buying new upholstered furniture, it is wise to select a reputable dealer, and to check on the following points:

1. Were the fabrics treated at the factory to prevent moth damage, and is there a guarantee which so states?
2. Is the layer of cotton next the fabric adequate in amount and coverage to protect the stuffing beneath from moth attack?
3. Is the bottom thoroughly covered with some fabric which moths will not eat?

Careful and frequent *cleaning* of upholstered furniture is a good way to prevent damage. Thorough brushing or vacuum cleaning with special attention to chair and sofa backs, and to concealed sections is essential. If slip covers are used in the summer, the furniture should be thoroughly cleaned before they are put on, and at intervals not exceeding two weeks while they are on. Remember that moths are attracted to dark, hidden places and slip covers offer them protection.

If moths are discovered elsewhere in the house, they must be eradicated, and all upholstered furniture which is liable to attack must be carefully inspected to make certain that no damage has been done.

Liquid moth sprays (page 370) are recommended for the upholstery covering, as an added precaution. These sprays should be applied thoroughly, so that every section of the fabric is saturated. A power spray or the spray attachment of the vacuum cleaner is most satisfactory for this purpose.

If you discover signs of infestation in the stuffing of upholstered furniture, you can either send the articles out to be fumigated and pay rather a high price for this service, or you can undertake fumigation at home.

How to fumigate the stuffing in upholstered furniture

1. Loosen the covering at the back and bottom.
2. Place moth crystals (page 369) in the special container attachment of the vacuum cleaner (use ½ pound of crystals for a chair and 1 pound for a davenport).
3. Fasten the hose attachment to the cleaner and place the end of the hose in the opening at the back or bottom of the article.
4. Disconnect the belt of a motor-driven brush or agitator type cleaner.
5. Sprinkle additional moth crystals in the crevices of the furniture.
6. Place the cleaner close to the furniture and cover both with a double pair of blankets with newspapers sandwiched between them, or with a special paper bag intended for this purpose, making the covering as airtight as possible. The blankets or paper bag must reach the floor, and books should be placed on the bottom edges, to make a tight seal.
7. Plug in the cleaner and switch on the motor. To vaporize ½ pound of crystals, let the motor run 1 hour; for 1 pound let it run 2 hours.
8. Do not disturb the covering for at least 72 hours.
9. Room temperature should be at least 70° F. throughout this period.

Furniture Storage

When furniture is to be stored in a home closed for some time, a satisfactory method of preventing moth damage to the upholstery itself is to spray it with that type of *liquid spray* which renders the fabric inedible to moths. This liquid should be sprayed on very thoroughly so that every portion of the fabric is thoroughly saturated. If the furniture is hair stuffed, you must take the additional precaution of scattering one pound of paradichlorobenzene crystals over the seat of the furniture, then wrapping the whole piece in heavy paper. The paper must cover the bottom as well as the upper part of the piece and must be tightly sealed with gummed tape. If it is not sealed, moths can enter in the openings and destroy the filling.

If the furniture is not stuffed with hair, the use of crystals and paper wrapping is not necessary. Separate down cushions may be sealed in a paper wrapping together with liberal quantities of crystals.

Modern storage companies have complete facilities for storing your furniture to prevent moth damage.

Moth-Proof Storage

Stored clothing, furs, blankets, etc., must be protected against attack:

1. Articles to be stored must be thoroughly clean. Moths attack soiled areas first.
2. A moth-destroying compound (page 369) must be used in sufficient quantity (1 pound or more per 100 cubic feet).
3. The storage place must be sealed so that it is airtight.

Storage Containers

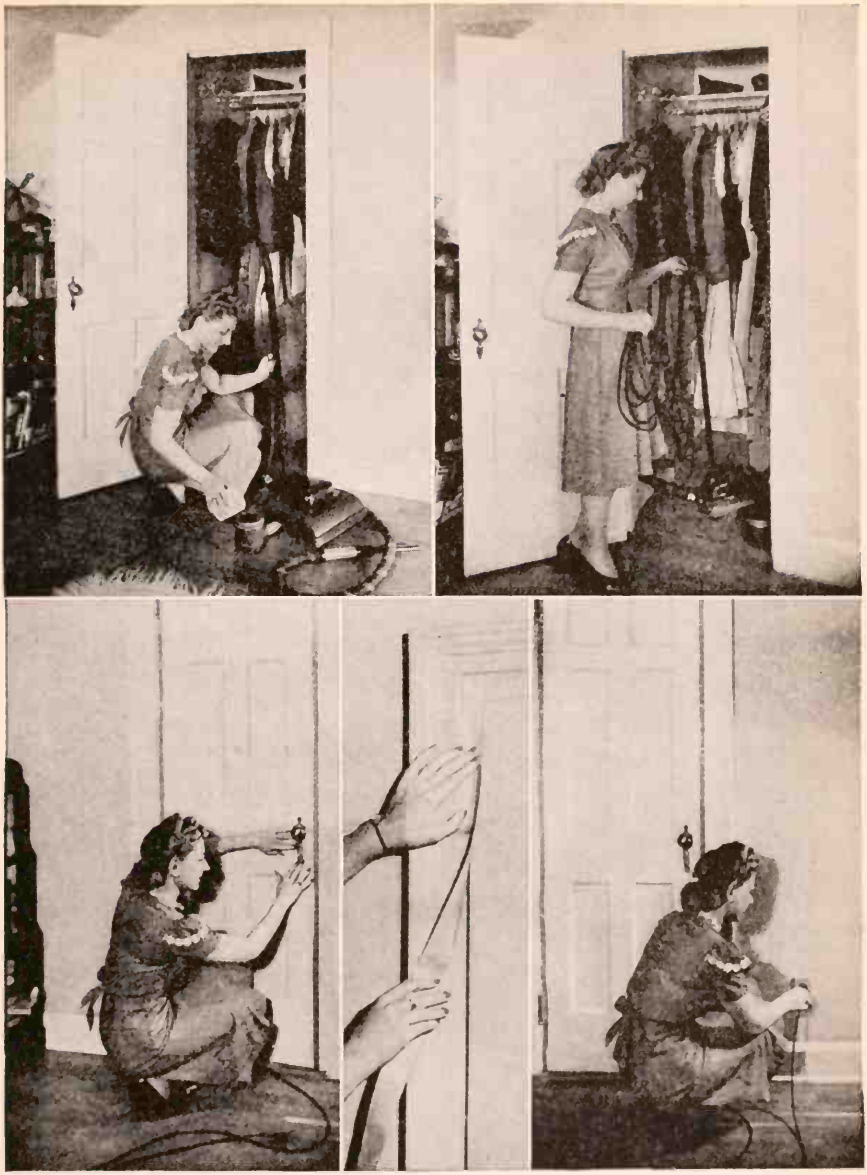
Cedar chests are effective only if they contain a high percentage of red cedar heartwood. If the sides, ends and bottoms are made of heartwood at least ¾-inch thick, and the cover of solid red cedar or neutral wood lined with red cedar veneer, all newly hatched or young moth larvæ will be killed if the chest is kept tightly closed. All articles to be stored in the chest must be thoroughly brushed to remove eggs and older larvæ, unless they have been washed or dry cleaned immediately before being packed away. Brush seams and pockets with great care.

The characteristic odor of red cedar is due to a volatile oil, and for this reason the chest must be kept tightly closed except when articles are being put in or taken out. With time the effectiveness of the cedar chest diminishes, and after it is three years old, added precaution is necessary: crystals of paradichlorobenzene should be scattered throughout the articles stored in the chest, using at least 1 pound per 100 cubic feet.

Cedar-lined closets of usual construction cannot be depended upon to protect woolens or furs from moths, because they are not "tight" enough to retain the volatile substance that kills the young larvæ. Chips of red cedar wood, cedar veneers, blocks of wood saturated with cedar oil, cedarized paint, cedar oil, etc., for coating bureau drawers, closets, etc., have no practical value. Paper garment bags or cardboard storage boxes treated with cedar or pine oil are no better than plain bags and boxes.

So-called *"moth-proof" paper bags and boxes,* if tightly sealed and properly used, will prevent moth millers from getting at the articles stored in them. *They will not kill millers, eggs or larvæ already in the clothing.* If torn or unsealed they are valueless. Articles must be free of eggs and larvæ before being placed in these containers. It is safer to add moth crystals (page 369) to the contents, so that eggs and larvæ, if present, will be killed by the fumes given off by the crystals.

If clean garments or other articles subject to moth attack are sprin-



Bottom center: Photograph by William H. Zerbe

STEPS IN FUMIGATING A CLOSET

Top left: Fill the container with "moth crystals."
Top right: Place the vacuum cleaner in the closet.
Bottom left: Seal the closet with fumigator's tape.
Bottom center: If fumigation is to be effective every crack must be sealed.
Bottom right: Attach the vacuum cleaner; run motor for prescribed time.

kled with moth crystals (page 369) and wrapped in several thicknesses of heavy wrapping paper and sealed, there will be no danger of moth damage. Hats may be placed in boxes with moth crystals and the boxes wrapped in heavy paper and sealed with gummed paper.

If *trunks* are used, all cracks and crevices must be sealed. The articles to be stored must be thoroughly clean. One pound of moth crystals, scattered between layers of tissue paper, should be evenly distributed throughout the trunk. After the trunk is closed it should be sealed with gummed tape or fumigator's tape.

A tight *closet* may be used for moth-proof storage, if it is devoted to that purpose. Opening and closing the door defeats this purpose. All cracks and crevices must be sealed, and all articles to be stored must be thoroughly clean. If moth crystals are used, it must be remembered that they must vaporize before eggs and larvæ are killed. Unless vaporizing is speeded up, moth larvæ may have time to do a great deal of damage before they die. Recent experiments conducted at Columbia University proved that as much as 4 pounds of para crystals (page 369) correctly distributed did not make a complete kill in a sealed closet until 13–14 days had elapsed. This is long enough for considerable moth damage to be done. When ½ pound of para crystals were completely vaporized with a vacuum cleaner attachment a complete kill was effected in only 72 hours.

How to Fumigate a Closet with Paradichlorobenzene

1. Place a vacuum cleaner containing ½ pound of para crystals in the closet with the stored articles.
2. Seal the closet with fumigator's tape.
3. Turn on the motor.
4. After 1½ hours turn off the motor.
5. Remove the cleaner quickly.
6. Reseal the closet at once.

Electric vaporizers often sold for this purpose have been found to be less satisfactory than a vacuum cleaner because they require 28 ounces of para crystals instead of 8, and because more time is required for a complete kill (3½ days instead of 3 days).

Cold Storage

Moth larvæ become inactive at low temperatures. Cold storage for furs and other articles is based on this principle. Of course the larvæ that may

be present are not killed, so it is safer to have all articles laundered or dry cleaned to destroy eggs or larvæ before putting them in cold storage. Many dry-cleaning establishments have cold-storage vaults, and some vaults are equipped with fumigation facilities.

If garments are hung in the *hot sun* (110–128° F.) for several hours, moth eggs will be killed and moth larvæ will drop off. The garments should be thoroughly brushed before and after sunning.

Rug Storage

It is safest to have wool rugs cleaned and put in *cold storage* or *fumigable storage* if the house or apartment is to be closed for the summer months. However, if this is impracticable for any reason, take the following precautions:

1. Sprinkle the surface of the rug lavishly with moth crystals.
2. Roll the rug tightly.
3. Wrap the rolled rug in heavy paper.
4. Seal with gummed paper.

Storage of Wool Draperies

Same procedure as for rugs (see above). Roll draperies over cardboard tube.

Some reliable dry-cleaning establishments will treat woolen articles to make them resistant to moth damage, or will return them after dry cleaning in *sealed moth-proof containers*. If you wish to have articles "moth-proofed" at the dry cleaner's, be sure to read and understand the guarantee which the company offers, *before* the work is done.

What Does "Moth-Proof" Mean?

If you see the words "moth-proof" on a label, how much can you assume? Practically nothing, unless these words are backed up with a specific guarantee. Such a guarantee should include the following information:

1. Permanence of protection in terms of months or years of service.
2. Effect of washing or dry cleaning.
3. The basis for adjustments—replacement, repair or cash.

Pantry Pests

Insects that destroy food are very numerous and include weevils, flour moths, grain beetles, cheese skippers, larder beetles and mites.

They invade packing plants, warehouses and grocery stores, enter the food and, eventually, our pantries.

Grain beetles and flour moths attack dried beans and peas, crackers, flour, cornmeal, dried fruits, packaged cereals, etc. Such food usually leaves the manufacturing plant in perfect condition, but may become contaminated before it reaches you, particularly in hot weather. Some grain beetles can bite through cardboard packages to make their entrance.

If you find unsightly webbed masses in cereals, flour or cornmeal, you know that the *flour moth larvæ* have been at work. Holes in dried beans, peas or grain indicate the presence of *grain beetles.*

Control

Contaminated food should be destroyed immediately by *burning.* If the package has been kept on the shelves for any length of time, the whole cupboard must be *cleaned and fumigated* to prevent spreading the damage. First wash the cupboard with very hot suds. Then spray thoroughly with a good fly spray or dust well with fresh pyrethrum powder. Close the cupboard tightly and leave several hours. Afterward, use the vacuum cleaner attachment, or sweep the shelves thoroughly and wash them again.

Infested flour should be destroyed and the bins washed and scalded with boiling water.

The *cheese skipper* is not nearly so prevalent now as it was in grandmother's day when hams, sides of bacon and cheese were stored in homes, without benefit of refrigeration. The adult is a tiny fly which lays its eggs in cheese or pork. The larvæ or maggots are white worm-like creatures and it is in this form that the insect does its damage.

Control

All infested food should be destroyed. Cheese skippers are extremely resistant to insecticides and the only means of protecting foods is to cover them with gauze or keep them in a refrigerator.

Both the adult *larder beetle* and its larvæ or grubs attack ham, sausage, bacon, dry fish and cheese, although the grubs are more destructive. The beetle is about ¼-inch long and black, except for a wide horizontal band of pale yellow. The grub is brown and hairy, with two spines at the end of its body.

Control

If an infestation is discovered the food should be destroyed and the pantry thoroughly *cleaned,* and liberally sprayed with an insecticide

spray (page 346). If an entire house is infested, professional treatment by a reliable pest control operator will be necessary.

Mites of a certain species are sometimes found in certain foodstuffs such as flour, cereals, cheese, meat, dried fruits, potatoes and carrots. These mites are so tiny they are almost microscopic—masses of them look like dust that is alive.

Control

Infested food should be destroyed. Cupboards should be thoroughly *washed* with soap and water, and lavishly sprayed with a good insecticide spray (page 346).

Silverfish

The more common species of the destructive silverfish is a silvery gray, slender, wingless insect, about three-eighths of an inch long, with two long slender feelers at the head end, and three long tail-like appendages at the rear end. Another species called the "fire brat" has dusky markings on its back. They hide during the day, and are seldom seen unless objects behind which they are hiding are moved. They move with great rapidity and are extremely difficult to catch.

Silverfish feed on the sizing in paper, window shades, wall paper, rugs and bookbindings, the starch in clothing or curtains, and to some extent they eat through fabrics, particularly rayon. They prefer foods having a high starch or sugar content and are especially fond of damp wheat flour. Thus, an infestation of silverfish means the destruction of books, papers, wallpaper, stored starched clothing, etc.

They prefer to live in damp, warm places, such as basements, bathrooms and areas near chimneys, and often infest houses which are closed for the summer. They invade new buildings in great numbers when the walls are still damp. In apartment houses they follow the heating pipes to apartments on the lower floors. They are able to live for long periods under unfavorable conditions of food supply, or with no food at all.

Control

Silverfish are not apt to attack books that are kept in airy dry cool rooms (page 202), nor to attack stored clothing that does not contain starch.

Fresh *pyrethrum powder* dusted or blown into places infested by silverfish is effective, but must be renewed frequently. It is wise to spray thoroughly with a good household insecticide *spray* before using the powder.

Spiders

House Spiders

Many kinds of spiders are found in houses, and often they cause annoyance by building their webs in corners and on furniture. However, spiders are more beneficial than harmful, because they destroy flies and other insect pests. Most house spiders cannot bite, because their jaws are not powerful enough to pierce the skin. Furthermore they do not have active poison glands. The black widow spider (below) is the only dangerous species in this country, and it seldom enters houses.

Spiders live in trash, old lumber, woodpiles, basements, etc., and the young spiders enter a house through screens or loose-fitting windows and doors.

Control

Breeding places in barns, outbuildings, etc., should be sprayed with *cattle spray*. Careful *screening,* particularly of basements, helps to keep spiders out and also keeps out other insects which serve spiders as food, thus discouraging the spiders themselves.

Webs should be brushed off (page 157) and spiders destroyed. If white egg cocoons are found they should be destroyed by crushing. The use of a good household insecticide spray in infested rooms is effective. Directions for using this type of spray are given on page 346.

Black Widow Spiders

This poisonous species of spider is found in all parts of the country, although it is more prevalent in the South. The female black widow spider is about 1½ inches long, including the legs, and shiny black with one or more red spots near the tip of the abdomen, and a red mark shaped like an hourglass on the underside of the abdomen. Adult males and young spiders have yellowish markings on the upper part of the abdomen. The males are smaller than the females.

Black widow spiders frequent sheds, woodpiles, outdoor toilets, culverts, hollow logs, etc.

Contrary to general opinion, this species is not aggressive. It is attracted to moving objects and may bite them if it is hungry. Its bite is painful and causes serious systemic disturbances.

Control

Same as for House Spiders (see above).

Squirrels

Summer homes that are closed except for a few months during the year are apt to suffer from an invasion of squirrels, unless precautions are taken. Mattresses, pillows, cushions and even woodwork may be seriously damaged.

Control

Tops of chimneys should be *screened* and all other openings tightly closed, so that squirrels will not find any means of entering the house. If the nests are found indoors, put *naphthalene crystals* in them, and the squirrels will depart.

Mattresses, pillows, clothing and linens may be protected from squirrels, chipmunks and rats by making one large closet "animal-proof." Tack screening along all the joints of the closet where these rodents might find a spot to gnaw through. Cut the screen in strips six inches wide and as long as the seams to be covered.

Make a center fold in the screen so that the two halves are at right angles to each other. To close a corner seam tack one side of the screen to one wall, the other side to the adjoining wall. Along the floor tack one side to the floor, the other side to the baseboard.

Termites

Termites are often called "white ants" but in reality they are not true ants, and actually are more nearly related to the roach family. They do not have the "wasp waist" characteristic of the ant family. The workers and soldiers are blind and wingless; other adult termites grow wings which are shed after the nuptial flight.

In forests, termites are useful because they remove dead wood. In communities, they are destructive because the workers eat away timbers and building foundations. No species of wood is immune, although termites prefer certain kinds when they are available. This pest has destroyed wooden boats, all kinds of buildings, fences, paving blocks, telegraph poles, books, shoes and clothing—in fact any product made of cellulose.

Termites work in three ways: by tunnelling within wood, by digging into and through the ground, and by establishing shelter tubes above the ground when they have to cross metal, concrete, etc., to reach the wood they feed on. The shelter tube is attached to a wall pillar, vine or tree trunk. The work of termites is never apparent until the damage has been done. They work best in the dark, gradually eating away the interior of the wood, and never breaking through to the surface.

Warmth and moisture are essential to termites. In fact they create moisture which often damages materials with which they come in contact.

Termites are travellers. The winged adults swarm to form a new colony, often close to their breeding place. The workers and soldiers travel underground, from house to house, spreading damage as they go.

Sometimes signs of infestation are apparent. Swarms of flying termites, in the spring or fall, numbers of dead winged adults, or wings that have been shed, grass and earth thrown out of crevices, or the presence of branching shelter tubes are all indications of infestation.

Control

The rapid increase of this pest has led to reforms in construction in an effort to make buildings proof against termite destruction.

The first step to take is to make certain that termites are the pests involved, because often other wood-boring insects may be doing the damage. A specimen should be shown to a reliable pest control operator or sent to the U. S. Bureau of Entomology or to the State Entomologist for identification (page 345).

If it is proved that termites are present, the next step is to call in a reliable termite *exterminating agency.* Unfortunately many unethical firms try to capitalize on the home owner's fear of termite damage. The methods these firms employ are worthless in termite control. A careful investigation should be made before any firm is hired to do the exterminating (page 350).

Building reconstruction is necessary if the damage is severe and if further damage is to be prevented. The most lasting and effective method is the replacement of wood with *concrete.* Next best is replacement with *treated wood. Protective shields* made of metal should be installed in places where termites enter a building. Only expert builders who are thoroughly familiar with the problem should be consulted with regard to structural changes.

The United States Department of Agriculture, Washington, D. C., has published authoritative material on the subject of termites: Farmer's Bulletin No. 1472, "Preventing Damage by Termites or White Ants," and Leaflet No. 101, "Injury to Buildings by Termites."

Tobacco Beetle or Tow Bug

The adult beetle is small and dull reddish yellow or brownish red. Its head is bent at a right angle to the body. When it senses danger, this beetle pretends to be dead.

HOUSEHOLD PESTS GROUPED ACCORDING TO WHERE THEY MAY BE FOUND

In Clothing, Woolens, Carpets, Stored Fabrics, Furs, Feathers, Upholstered Furniture	In Stored Foods and Pantries	In Baseboards, Floor Cracks, Crevices of Woodwork	In Damp Basements, Stonework, etc.	Along Waterpipes	In Rustic Furniture, Timbers, Dwelling Structure	Attacking Man or Animals
Bedbugs (page 353)	Ants (page 350)	Ants (page 350)	Book lice (page 355)	Book lice (page 355)	Mice and Rats (page 364)	Bedbugs (page 353)
Book lice (page 355)	Cheese skippers (page 380)	Bedbugs (page 353)	Cockroaches (page 357)	Cockroaches (page 357)	Squirrels (page 383)	Fleas (page 360)
Carpet beetles, Buffalo bugs (page 355)	Cockroaches (page 357)	Carpet beetles (page 355)	Crickets (page 359)	Silverfish (page 381)	Termites (page 383)	Flies (page 361)
Crickets (page 359)	Houseflies and Fruit flies (page 361)	Silverfish (page 381)	Fleas (page 360)			Lice (page 363)
Mice and Rats (page 364)	Grain beetles and Moths (page 380)		Silverfish (page 381)			Mosquitoes (page 367)
Moths, Moth larvae, "Millers" (page 368)	Larder beetles (page 379)		Spiders (page 382)			Rats (page 365)
	Mice and Rats (page 364)		Water beetles (page 357)			

If you have found an unknown bug or other pest in your home, this chart will help you look it up for identification.

The larvæ eat cured tobacco, bookbindings, seeds, paprika and drugs and are particularly fond of vegetable fillings used in overstuffed furniture, such as flax, tow, hemp, palm fiber and sea moss or Spanish moss. The furniture covering is not damaged unless the adult beetle cannot find a seam opening through which to leave.

Control

Moth-proofing and pyrethrum powder are not effective.
Professional treatment (page 349) is necessary to end an infestation.

SECTION SIX

Small Electrical Equipment

Electrical servants which speed up and perfect cooking operations can be a joy. Unfortunately, once the initial investment has been made, we don't collect a high enough return in good service and long life. This, of course, is our own fault, providing we bought wisely in the first place. With just a modicum of care and attention, good electrical appliances will give excellent service over a long period of time. This care is up to us.

When you have decided that an electric mixer or a new waffle iron is just what you need, your first step is to look into the kinds that are available and see as many demonstrations as possible before you make your choice. Be certain that the one you select is designed to operate on the type of electric current (A.C. or D.C.) which serves your home.

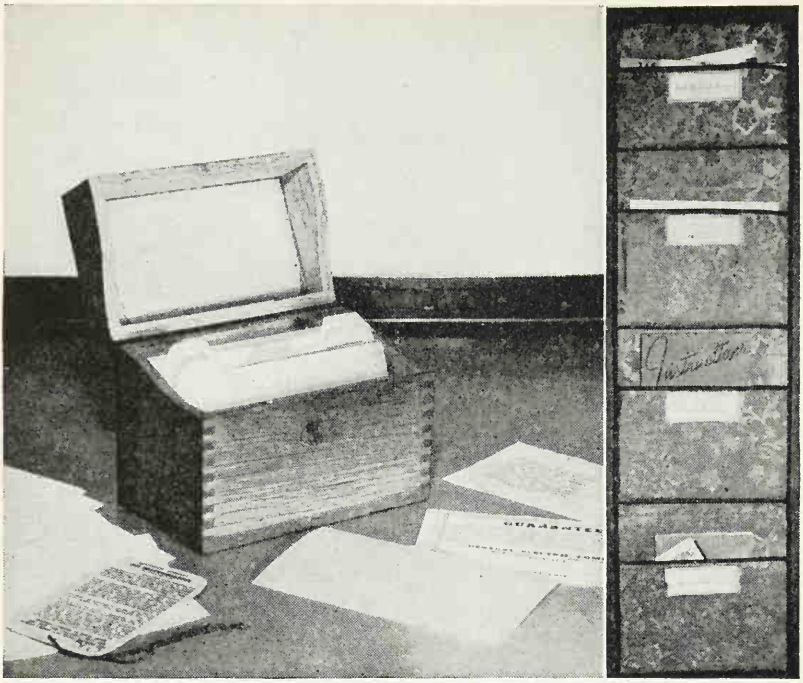
Once the new appliance is in your possession, study the manufacturer's directions for use and care before you use it the first time. Keep these directions at hand for quick reference in some convenient spot in the kitchen (page 34). Reliable manufacturers spend a great deal of time and money in working out these instructions, because it is to their best interests to have the appliance give satisfaction to its owner. If you follow directions you will avoid mistakes that may be costly in raw materials or in damage to the device itself.

Teach your household helper how to operate electrical appliances. Once she understands how easy it is to use them any tendency to shy away from unknown territory will be overcome, and she will welcome the excellent results that such appliances can give.

Never immerse any electrical equipment in water unless it is designed for such use, as is the case with immersion water heaters. Keep appliances clean, lubricate them according to the manufacturer's directions, and have them repaired whenever necessary.

Electric Mixers

Long ago we learned how important it is to measure ingredients, time and temperature for good results in cooking. Now, with the help



Photographs by Patricia Hall and William H. Zerbe

Left: Keep a file of manufacturer's guarantees, together with place and date of purchase.

Right: A strip of oilcloth pockets, homemade or purchased at the ten-cent store, keeps direction booklets at hand for easy reference.

of an electric mixer we are able to measure mixing speeds—the final step in controlling results.

The mixer should be kept in a convenient location if it is to be useful. "Garage space" level with the working surface can sometimes be built into the kitchen cabinet at the food preparation center so that the mixer is protected from dust but easily available. Or it can be kept on the counter and protected with a specially designed transparent covering. If you don't already have a convenience outlet at the working center, have one installed. Don't tuck the helpful attachments away on a high shelf where they will be seldom used, or even forgotten. Make space for them in a convenient drawer or on a low shelf, and use them in all the many ways for which they were designed.

Until you have used a mixer and at least two or three attachments, you can have no idea of the many tasks it will perform for you, and with what superior results. For example, it will whip together all types of batters and doughs, turning out feathery cakes or light-as-air muffins quick as a wink. Orange juice for the whole family is a matter of seconds with the juicer attachment. Mashing potatoes and other vegetables is no trouble at all, and lumps can't hold out against the beater blades in action. Frostings of all types reach new heights of fluffiness; milk drinks take on a professional air; homemade mayonnaise is no longer a problem; sliced, grated or shredded vegetables for soups and salads are made ready in a moment; and you can even chip ice and freeze ice cream to smooth perfection with the necessary attachments. A meat-grinding attachment that doesn't require arm power will surely be a worth-while investment in many homes, and you can even have a coffee grinder, a flour sifter, a potato peeler, a pea and bean sheller, a sieve, a can opener, a knife sharpener or a polisher with several models. Choose a mixer that can be equipped with the attachments that will be of greatest help to you, and add them as your budget permits.

Mixing Speeds: The most common mistake that new users make in operating a mixer is to overbeat. They forget that a motor is more powerful than arm muscle, and swifter too. To avoid this trouble, assemble and measure all ingredients before you begin the mixing operation. Once mixing starts, give it your full attention, and follow directions carefully as to speeds and time periods. Certain mixers have only two speeds, others three or more and some have different attachments for different mixing operations, so that directions necessarily vary for different types.

Be sure to have a rubber plate scraper at hand to keep mixtures from accumulating on the sides of the bowl. Always turn off the motor before attempting to raise the beaters or remove the bowl.

Care:

1. Oil the motor in accordance with manufacturer's directions.
2. Wipe off the motor housing and the stand after each use with a cloth wrung out of soapy water. Rinse with a cloth wrung out of clear water. Dry thoroughly.
3. Detach beaters immediately after use; wash, dry thoroughly and replace.
4. Wash the bowls according to the material of which they are made (see index).

Electric Roasters and Ovens

Ever since the electric roaster first came into use it has enjoyed great popularity. For its size it is an extremely useful and versatile cooking aid. It bakes bread, cake, muffins, pies, cookies, vegetables, casserole dishes or puddings; it roasts meat and poultry; whole meals can be cooked in it successfully, and if it is equipped with a broiling unit and grid you can broil steaks and cook pancakes to every one's satisfaction. Fruits and tomatoes can be processed in the roaster when home canning time rolls around.

A roaster or oven may be connected to an ordinary convenience outlet, but never to a light socket. Attach the cord to the roaster and then plug it into the outlet. The high voltage is a heavy pull on the house circuit, so never attach another heating device such as an iron, toaster, waffle baker or coffee maker to the same circuit when the roaster is in use. The roaster and broiling unit must never be used at the same time.

Low voltage slows up preheating and lengthens cooking time, so be sure that the circuit voltage is high enough for satisfactory operation.

Use: The wisest procedure for satisfaction is to follow the manufacturer's directions as to time and temperature, position of foods and assembly of parts. However, there are a few general comments and suggestions which may prove helpful:

1. Certain models are equipped with a thermostatic control, and a signal light which goes out when the temperature setting is reached. Preheating takes from 15 to 30 minutes according to the temperature setting.
2. The lid should not be removed during the cooking period unless absolutely necessary, because a great deal of heat is lost, and browning is retarded. At least one manufacturer has equipped the lid with a glass "window" so that browning can be watched without removing the lid.
3. The large inset pan is usually left in the roaster for all cooking processes. A wire rack is provided for pans holding food that is to be baked so that air can circulate around them. A large roast, set on a trivet, may be placed in the inset pan which then serves as a roasting pan. Soups and stews may be prepared in this pan when a large quantity is needed. The broiling unit operates over the inset pan and pan-broiling can be done in the bottom of the inset pan itself, using high heat to start and low heat to finish.

Care

1. Never immerse the roaster in water.
2. Wash the outside with a cloth wrung out of soapy water. Rinse with a cloth wrung out of clear water. Dry thoroughly.
3. The inset pan may be removed for washing. This is enamel, which is a glass coating on steel, and must be handled carefully. Sudden changes in temperature may cause cracking, so let it cool before washing it. If food burns on, soak off as much as possible with warm soapsuds. Scrape off the rest with a wooden skewer.
4. Other utensils, such as baking dishes and pans, are washed according to the material of which they are made (see index).
5. Always wash and scour the inside of the lid, particularly after roasting.
6. When the roaster is not in use leave the cover slightly ajar so that "off" odors will not develop.

Electric Coffee Makers

Percolators: If the percolator is equipped with a valve the water sprays over the coffee a little at a time until all the water is heated, while in a valveless percolator the water is heated to the boiling point before it begins to spray.

Time the percolation from the first moment the water shows signs of discoloration, allowing 7–10 minutes for best results. An all-purpose or percolator-grind coffee should be used.

Vacuum Coffee Makers: This type of coffee maker may be all glass, glass and metal, glass and plastic, or all metal. The upper and lower sections are separated by a filter, and the electric unit may be a part of the lower section, or entirely separate.

The coffee is placed in the upper section, and water is placed in the lower section. When the current is turned on the water is syphoned to the upper section until only a little is left in the bottom. At this point the current is turned off and the brewed coffee returns to the lower section.

A fine grind of coffee is essential to best results.

Although this is not a cook book, we feel justified in the interests of breakfast-table harmony, in giving you directions for making perfect coffee. The secret is in accurate measurements. An ordinary cup and tablespoon won't do, so please get out your measuring cup and

spoons. Three level measuring tablespoons of coffee to each measuring cup of water make a soul-satisfying brew for the real coffee lover. More timid souls may find two level measuring tablespoons to each cup of water better suited to their taste. And please use freshly ground or vacuum-packed coffee. Coffee that is stale is not coffee at all.

Care

1. Scrupulous cleanliness should be your watchword, for the taint of rancid coffee will spoil a fresh batch.

   (*a*) Wash the coffee maker in fresh, clean soapsuds, never in the dish water used for other dishes.

   (*b*) Use a brush especially designed for the type of coffee maker you use.

   (*c*) Rinse with great thoroughness.

2. Airing is essential. If there is plenty of storage room it is best never to assemble a coffee maker when it is not in use. If you cannot do this, allow the parts to air thoroughly before assembling them. Every week or so give a metal coffee maker an airing out of doors in direct sunlight.

Electric Waffle Bakers

Read the instructions which come with the waffle baker to find out whether the grids should be seasoned before the baker is used for the first time, and if so, how to do it. Certain models are pretreated at the factory and no seasoning is necessary. If you do not have any instructions, the following procedure is a safe one:

1. Apply a thin film of melted, *unsalted* fat to the grids with a pastry brush.
2. Close the baker and turn on the current (set the thermostat at low on an automatic model).
3. Heat about 8 minutes.
4. Wipe off any excess fat with paper towelling.

Unless the waffle-baker is left unused for a long period, one seasoning should be enough for the life of the baker.

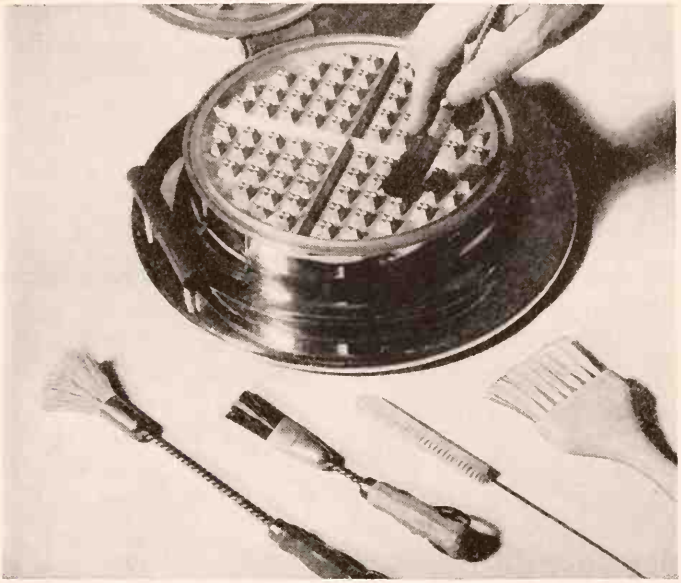
Use

1. The grids must be heated to correct temperature for good results.

   (*a*) If the grids are not hot enough the waffles may stick or be spotted with white patches.

(*b*) If the grids are too hot the waffle will brown before the center is done.

(*c*) Plain waffles require moderately hot grids. Special batters (chocolate, molasses, cheese or fruit) require slightly cooler grids.



Photograph by William H. Zerbe

Remove crumbs from waffle grids with a stiff wire brush. Other small brushes are useful for cleaning electrical equipment.

2. How to get correct temperature:

(*a*) Automatic waffle bakers are equipped with a heat control which can be adjusted to different settings.

(*b*) Water test for non-automatic bakers:

Moderately hot—drops of water form white balls and roll around on grids.

Cooler—drops of water bubble slowly and boil away.

3. If you are sure the temperature is right, and the waffles still stick, it may be that your waffle recipe does not call for enough melted shortening. Try adding an extra tablespoon or two.

4. The size of the grids and the thickness of the batter determine the amount of batter for each waffle. For batter of average thickness fill the grids to within 1 inch of the rim.

Care

1. Disconnect waffle baker as soon as the last waffle is baked.
2. Leave the baker open until the grids are cool.
3. Wipe off any excess fat from grids with paper towelling.
4. When the baker is cold, wipe off the outside with a cloth wrung out of soapy water. Rinse with a cloth wrung out of clear water. Polish with a dry cloth.
5. When necessary, brush the grids with a stiff wire brush to remove crumbs.
6. If batter has burned on the grids use slightly dampened steel wool to remove it, and reseason the grids (page 392).

Electric Table Grills

Grills do not usually require any seasoning, but be sure to check the instructions and follow them.

Use

1. Be sure the grease cup is in place.
2. Preheat according to the manufacturer's directions for the food to be grilled.
3. An even temperature is maintained during continuous cooking by opening the grill and placing cold food on the grid. If intervals are long, disconnect the cord occasionally to prevent overheating.

Care

1. Immediately after use, disconnect the cord.
2. Leave grids open while the grill cools.
3. Wipe off crumbs with a damp cloth.
4. If food particles stick to the grids remove them with a spatula or dry steel wool while the grids are still warm.
5. If the grids are badly stained or very greasy, remove them according to manufacturer's directions and wash them in hot soapsuds. Scour with mild scouring powder if necessary. Rinse and dry thoroughly before replacing.
6. Wipe the outside of the grill with a soft cloth wrung out of warm soapsuds. Rinse with a cloth wrung out of clear water. Polish with a soft dry cloth.

Electric Toasters

If you are an habitual toast-burner by all means choose an automatic toaster! Non-automatic models do a good job, but they must be watched and tended.

Photograph by Patricia Hall

Use a soft brush to remove crumbs from the toaster—never shake or bang it, as the wires may be damaged as a result.

Care

1. The metal shell in some toasters may be removed to brush out crumbs.
2. A collection of crumbs in the bottom of the toaster may cause a short circuit. Use a soft brush (a pastry brush does nicely) to brush out crumbs. If it is necessary to shake the toaster, be gentle about it. Violent thumping or shaking damages the fine wires.
3. "Warped" slices of bread are apt to stick to the wires; use even slices for best results.
4. Wipe the outside of the toaster with a soft cloth wrung out of warm soapsuds. Rinse with a cloth wrung out of clear water. Polish with a soft dry cloth.
5. Never immerse the toaster in water.

Photograph by William H. Zerbe

A strip of outlets spaced fairly close together is easy to have installed and increases the convenience of the preparation center.

Care of Connecting Cords and Plugs

1. Never handle cords or plugs with wet hands (page 102).
2. Grasp the plug, not the cord, in disconnecting the cord from the convenience outlet.
3. Attach the cord to the device, then connect the cord to the outlet in order to avoid "sparking."
4. Never bend a cord sharply. Hang it over a broad wooden peg or across two nails.
5. Look for the Underwriters' Laboratories label on the cord when buying appliances or new cords (page 90).
6. For minor repairs, see page 483.

How Much Will It Cost to Operate?

It is possible to estimate the cost of operating a small electrical appliance by means of a simple formula.

Multiply the wattage of the appliance (see nameplate on appliance)

by the approximate number of hours it will be used for one month. Divide the answer by 1000. The resulting figure will give you the number of kilowatt hours per month. Multiply this figure by the rate per kilowatt in your locality (you will find this figure given on every bill from the lighting company). For example:

A non-automatic electric toaster has a wattage of 500. If you use it for 10 minutes each day for 30 days the current will be on for 300 minutes or 5 hours during the month.

$$500 \times 5 = 2500 \text{ watt hours}$$
$$2500 \text{ watt hours} \div 1000 = 2\tfrac{1}{2} \text{ kilowatt hours}$$
$$2\tfrac{1}{2} \text{ kilowatt hours} \times .06 = .15 \text{ monthly cost}$$

This formula can be applied to all electrical equipment—vacuum cleaner, smoothing irons, mixers, etc. Remember that it naturally takes more current to heat a device than it does to operate a motor, so that for the period of actual use a smoothing iron costs more to operate than a mixer or a vacuum cleaner.

SECTION SEVEN

Moving Day

MOVING

Even though your new home may be all you have ever dreamed of having, it is quite possible that the thought of moving your possessions into it seems more than you can face. But moving does not need to be a weary chore unless you make it so by going about it in a haphazard, hand-wringing fashion that will get you nowhere.

First of all, if you select a reliable warehouse to handle the moving, you will automatically spare yourself a great deal of anguish and confusion. Such a company employs only skilled men who know how to handle the most delicate bric-a-brac as well as the piano.

If you don't already know of such a firm do a little investigating yourself. The most important considerations are safety, financial responsibility and reputation. Your bank will tell you which concern or warehouse meets these specifications.

Next, decide what type of service you want. Large firms are equipped to take all the burden of moving on themselves, if you wish. For an additional charge they do the entire packing and unpacking job—even clothes and the contents of bureau drawers. If you can afford this service you will revel in the relief it brings you in freedom from details and worry.

All large, well established and reputable moving companies carry what is known as "cargo insurance" against loss or damage to the customer's goods. All companies doing long-distance moving are required by public authority to carry such insurance. Always inquire about the extent and nature of the coverage.

If you wish to protect yourself against risks for which the moving company or its insurance carrier is not liable you may buy an "all risk" insurance policy which costs about $2.50 per $1000 value, and which covers loss or damage during moving. This should be arranged at least a month in advance of the moving date to allow time for investigation by the moving company.

Ask the company for a price estimate before you set the day for moving. Reputable companies give honest estimates which are based on years of experience. In an intra-city move, or for a distance of less than 100 miles, the contract will probably be figured on an hourly rate, while the cost of moving more than 100 miles will usually be based on weight and distance. The tariff rate is regulated by public authority.

If you are paying by the hour, it behooves you to make sure that there will be no avoidable delays for which you are to blame. Employees of a reliable company will not dawdle, but if you are not ready for them they must stand idle while the clock ticks on.

In moving from one apartment house to another there may be costly delays that could be at least partially avoided by a little foresight. For example, a few large cartons require fewer trips than many small ones. Of course superintendents are naturally not as solicitous about outgoing tenants as they are anxious to please those who are moving in! But ask well ahead of time for first place on the service elevators. If some one else has gotten ahead of you, ask for second place. Do the same for the new address. This one request, if granted, may save from twenty to forty dollars on the bill.

Unless you have shifted the entire burden to the moving company, you will find that a little organization ahead of time will spare your nerves and disposition when moving day dawns.

As articles are packed, jot them down, so that when the job is done you will have a complete inventory, down to the last saucepan. Then if an article should be lost you will know about it. And on the other hand, you will not be guilty of accusing the company of losing something which was never included in the vanload, but which Cousin Betty had borrowed long ago and never returned!

Write the contents of every box or barrel you pack on a large label and attach securely. Then you won't have to unpack box after box feverishly to find something you need at once.

Movers are not mind readers, nor can they see through a box or barrel. So mark each box that contains breakables "Fragile" or "Handle with Care," and mark it plainly. Ready-to-use stickers with these warnings printed on them can be found in all stationery shops, and some moving companies provide them on request.

Ideally, you should be on hand when your goods and chattels are removed from the old dwelling, and you should arrive at the new home before the movers get there. If this is impossible, at least stay in the former house until everything is safely in the van. The advantage of beating the movers to the new house is that you can have

the men lay your rugs and place all large pieces just where you want them, or at least in the rooms where they belong. However, if you cannot be there, give the man in charge a diagram of the rooms, each room marked with a different color. Then tag all furniture and rugs with tags of the same color as the room where they belong. Unless the movers are color-blind, this should simplify matters considerably! Red tags to the red-marked living room—green tags to the green-marked bedroom—what could be simpler? But if you entertain any doubts, go to the new house the day before, and pin a tag of correct color in each room. It is a good idea to ask the movers to load rugs on the trucks last of all. In this way they come off the truck first and can be laid at once, which saves the effort of moving furniture after it is placed.

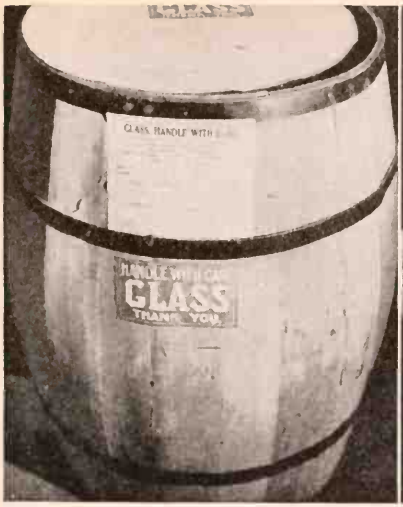
How about tipping the workmen? If you feel they have done the job competently and with special attention, you may wish to give each man some reward, but if you are going to tip, do it after the task is finished, not before.

If the budget won't stand letting the movers do all the work, then the whole family will have to pitch in and help. It will be more fun than work if you go at it the right way. Start well ahead of time, and pack first the things you won't be needing until you are moved. The coffee pot and its ilk must necessarily wait until the bitter end for their wrappings. Who could face moving day without a cup of good coffee?

How to Pack

China and Glass: It is much wiser to let a professional packer do this job. Moving firms, in fact, do not pay damages on fragile pieces unless these have been packed and unpacked by their own men. These men know just how to protect the edges of fine dishes against chipping, and how to pack pieces into a barrel so that none will receive shock or strain when the barrel is hoisted or perhaps dropped. The price per barrel includes both packing and unpacking.

If you do attempt the packing of china and glass pieces yourself, be sure to have plentiful quantities of newspaper, shredded and plain, tissue paper and excelsior. Stuff the inside of vases, pitchers, sugar bowls and hollow ware, so that there is padding inside to withstand a chance shock. Place crumpled paper between the concave side of one dish and the convex side of the next. Barrels or specially made containers are best for packing all china and glass, especially if it is to travel any distance. With special care, other sturdy boxes may be used for this purpose, but they do not endure strains and shock well. Moving companies can supply barrels or special containers, on request,



Photographs by William H. Zerbe

Left: Barrels and boxes should be carefully labelled. Most moving companies can supply as many as you need.

Right: Unless fine china is packed and unpacked by the employees of the moving company, no claims can be made for breakage.

at a nominal cost. Put on the bottom the sturdy pieces, such as earthenware baking dishes, glass cooking dishes and kitchen breakfast china. Pack finer dishes on top, with plenty of padding between them and the top of the barrel.

Fit each piece snugly so that nothing will rattle. Nest bowls with crumpled paper between them. Wrap each plate and then put several together and wrap again. Put these packages on edge, not flat. Set platters up on edge also. Wrap each cup separately, then nest, with packing material between. Fill hollow spaces with crumpled paper and wrap the whole with generous amounts of paper. Pack stemware with extreme care. Pad generously between, so that two pieces do not touch. Large pieces of cut crystal should be taken separately, by hand if possible. Mark barrel or box "Top" or "This Side Up" as an added precaution. Do not put the top on the barrel yourself. Only a professional packer can put the top on safely.

Silverware: Pack silverware in its own chest, where each piece is fairly secure from scraping against another. Add layers and corners of tissue paper as additional protection against shifting and scratching.

If silver is wrapped in specially treated tissue it will be protected against tarnish as well as from marring.

If you have no silver chest, wrap each piece in tissue (tarnish-resistant tissue for storage or long journeys), place it in a covered box, with the cover nailed, sealed or locked on.

Hollow ware should be stuffed with crumpled tissue to prevent denting and wrapped well in several thicknesses of crushed tissue and newspaper. Pack these pieces in a container which includes no heavy utensils to jar against and dent the silver in transit. To be certain not to lose precious pieces, if workmen are not bonded, take your silver with you when you follow the last van load of goods.

Kitchen Utensils: Kitchen utensils should be packed like china, paying particular care to stuff light pieces (such as sheet aluminum saucepans) with paper to guard against dents. Put plenty of paper between utensils to prevent scratches. Pack heavy cast-iron or cast-aluminum utensils in a box or barrel by themselves.

Rugs and Carpets: Have rugs and carpets stacked in rolls ready for the men when they put in an appearance. It costs time and money for them to do this for you on moving day. Each rug should be marked as to the room in which it is to be placed.

Pictures and Mirrors: Pictures should be taken down and stacked according to the rooms they are to decorate, if you know in advance. Place cardboard next each picture, tie the whole package up in strong brown paper, liberally stuffed with crumpled tissue or newspaper so that the contents cannot rattle and perhaps crack the glass. Small pictures and mirrors can be packed in bureau drawers between linens. It is a grave risk for any one but a professional packer to attempt to pack oil paintings or pictures with ornate frames. Valuable pictures and large mirrors should be packed by the movers, always.

Books: Books go in paper-lined boxes, not too large, with paper next each volume to prevent scratching and rubbing of the covers. Pack them solidly to prevent any injury to bindings, but do not pack more than twenty-five books in one carton. Books packed in large boxes are too heavy to be handled and the boxes may damage floors. Valuable first editions should be packed by experts. Be sure that any box used to hold books has a reliably solid bottom. Books are heavy, and cardboard containers from the grocer will not sustain them long, unless they are roped. Professional movers have book chests in which to pack your volumes.

Draperies and Glass Curtains: Roll all heavy draperies smoothly over a cardboard tube, and put them in large cartons so that they will

not crush. Keep them separate from other items. Fold glass curtains but avoid lengthwise folds as much as possible.

Lamps and Lampshades: Lamps should not be packed except for long-distance moving. They can be handled to better advantage if movers

Photograph by William H. Zerbe

Reliable moving companies can supply cartons to fit standard size mattresses.

look out for each separately. Always remove the light bulbs. Wrap lampshades loosely to protect them against dust and finger marks, but be sure their identity is not concealed by wrappings. Fine lampshades should be packed separately, in cartons.

Bureau Drawers: The tendency to use a bureau drawer or desk as a packing case may result in tragedy, particularly if the drawers have thin bottoms. Overloading may cause breakage of the articles inside and of the piece of furniture itself.

Bottles of toiletries and perfumes, left in dresser drawers, are treacherous in the hands of movers. Powder boxes with lids not securely fastened on with elastic bands are another hazard, resulting many times in complete snowing under of all drawer contents. Per-

fumes contain a high percentage of alcohol which, if spilled, will ruin the finish of furniture. Fasten bottle tops with adhesive tape to prevent leakage, and pack all bottles in a carton of their own.

Linens and some articles of clothing may be packed in bureau drawers for transportation, if the bureau is strong and well constructed. Pack them tightly, so that there is little room for shifting and crushing.

Bedding: Wrap bedding securely against dust and soil of street and hands. An all-over muslin cover is adequate protection for a mattress. Some companies provide, at a small charge, cartons especially sized for mattresses. Be sure that the workmen do not bend or fold an innerspring mattress, or you will face a costly repair job. Pillows should be gathered up in a big bundle in one or two thicknesses of old sheets, and tied, not pinned.

Clothes: Hang garments, fastened securely to hangers, in garment bags. Fasten the hangers firmly to the inside rod and be sure the bags are tightly closed. The movers can take them out of the house without crushing them. Some moving companies have portable wardrobes, which can be filled with hats and garments on hangers, securely closed, and rolled off expeditiously. Suitcases are an answer to this problem, but are a nuisance to pack and unpack, and invite creases and wrinkles if you are too tired to unpack them right away.

Furniture: Mirrors which are fastened to bureaus and dressers should be detached. For packing, see page 402.

Lock or block shut all drawers and sliding or hinged doors.

If it is necessary to have furniture crated for shipping long distances, it is best to have this job done by an expert. If drawers are tied shut put cardboard under the rope to protect the furniture.

Storing Furniture

At various times a householder may be faced with the problem of the storage of goods which may be surplus or temporarily unwanted. The facilities of a modern storage warehouse range all the way from simple "open" storage of household furniture to special equipment for the care of almost every conceivable item of personal possessions. Separate steel-door rooms are provided for furniture; special vaults for silver, art objects and other items of great value; cold storage vaults for furs, rugs, tapestries, woolens and other fabrics that require or warrant such protection; and some have safe-deposit boxes for jewlry, valuable papers and other similar items. Some companies even offer such additional special services as fumigation, moth-proofing, rug and upholstered

furniture cleaning, repair and cleaning of furs, restoration and refinishing of furniture. Unfortunately, many wholly unsuitable places are represented to be storage warehouses and no householder is entirely

Photograph by William H. Zerbe

Wardrobes of this type transport your clothing easily and keep it free from wrinkles.

safe unless a personal inspection is made of the place into which the goods are proposed to be put.

CLOSING THE HOUSE FOR THE SUMMER

So you're off to the mountains or seashore for the whole summer? We don't blame you a bit for being elated at getting away from the noise and heat of a summer in town, or for being impatient of housekeeping details at such a time. But we must hold you down to earth just long enough to assure ourselves that your house, although lonely, will remain in good shape during your absence!

The Kitchen

Refrigerator

1. If automatic, disconnect.
2. Clean thoroughly (page 248).

3. Leave door ajar.
4. If your refrigerator is of an old type, have a service man pump the refrigerant into the receiver.

Range

1. Shut off fuel supply at main intake.
2. Clean thoroughly (page 249).
3. Leave oven door open.

Sink

1. Clean thoroughly (page 252).
2. Run plenty of scalding water down the drain.
3. Dispose of every scrap of soap; rats love it.

Storage Cabinets

1. Dispose of all perishable foodstuffs.
2. Store non-perishables in tightly covered glass or metal containers.
3. Scald empty canisters; leave covers off.
4. Wash shelves.

The Dining Room

China

Protect from dust with cheesecloth, oiled silk or cellophane covers.

Silver

1. Pack in tarnish-proof tissue.
2. Take valuable pieces to the bank for safe storage.

The Living Room

Piano

1. Close, to protect against dust.
2. Move away from outside wall.

Rugs

1. Send valuable rugs to be cleaned, moth-proofed and stored.
2. Vacuum other rugs thoroughly; protect against moths (page 379).

Upholstered Furniture

1. Vacuum thoroughly.
2. Protect against moths (page 375).

Wood Furniture

Apply a protective coating of furniture wax or polish (page 185).

Draperies

1. Have dry cleaned or laundered.
2. Roll up on cardboard cylinders.
3. Wrap in paper to protect from dust.
4. If woolen, protect from moth damage (page 379).

Glass Curtains

1. Have dry cleaned or laundered.
2. If laundered, *do not starch* (page 381).
3. Do not iron.
4. Store rayon or silk curtains away from light and dust.

Books

1. Do not leave where direct sunlight may strike them.
2. Store them in a dry, well-ventilated place.
3. If fine editions need professional care, have this done while you are away.

Floors

If professional care is needed, arrange to have this done while you are away, if possible.

Fireplace

Close the damper.

The Bathroom

1. Be sure there are no soiled clothes left in the hamper.
2. Clean all fixtures thoroughly (page 243).

The Bedrooms

Blankets

1. Launder (page 298) or have them dry cleaned and moth-proofed (page 311).
2. Protect laundered blankets against moths (page 376).

Mattresses

1. Clean thoroughly (page 236).
2. Protect against dust.

Springs

Clean thoroughly (page 235).

Mirrors

Cover to protect from dust.

Rugs, Furniture, Draperies, Glass Curtains, etc.

See instructions under Living Room (pages 406–407).

Clothing

Furs and Woolens

1. Cleaned.
2. Stored at cleaners or protected against moths at home (page 376).

Cottons and Linens

Do not leave any starch in pieces to be stored, or silverfish may damage them (page 381).

Heating System

Now is the time for the annual professional cleaning job (page 417).

Plumbing System

Just before you leave, shut off the water supply at the main supply pipe.

A Final Check List

1. Check up on your insurance policies. Are both your house and its contents covered? A slight addition in your rate may give you more days of unoccupancy that are well worth the added cost. Water-damage policies, which will insure you against leaks in the roof as well as against plumbing accidents, are expensive but may be worth while.
2. Read gas, electric and water meters; record readings; have company official disconnect supply at main intake.
3. Check with telephone company as to whether it is cheaper to have telephone temporarily disconnected and connected again in the fall, or to leave it connected all summer.
4. Notify milk company and newsdealer to stop deliveries until further notice.
5. Be sure all bills are paid.
6. Remove all fire hazards from premises (page 87).

7. Notify post office of change of address.
8. Be sure all windows and doors are securely locked.
9. Leave a labelled key to the house with a trusted neighbor.

CLOSING THE HOUSE FOR THE WINTER

Summer is over and school bells are ringing. Evenings that are a bit too chilly for comfort, and thoughts of the gay winter season ahead lessen our reluctance to journey town-ward again.

So let's close up the country house and protect it from winter damage so that it may welcome us back again next summer with no reproaches.

Follow all directions for closing the house for summer (pages 405–408) and in addition do these things:

Heating System: If your summer home is one that has an oil burner or a gas-fired-boiler heating system and you have a caretaker to check your house *daily,* you can set your thermostat at fifty degrees and be confident that your water system is safe as long as your heating system is functioning properly. A thermostatic alarm connected to the caretaker's home, which lights a light or rings a bell there when the temperature in your home has reached a lower point, is a good idea. This thermostatic alarm should be set at thirty-five degrees so that the caretaker can be on the job before the temperature of your house gets down to freezing.

Plumbing System: If you don't have heat in your house, drain all fixtures (page 457) and cut off the water supply at the main supply pipe.

Chimney: Unless you want squirrels and chipmunks to move in when you move out, fit a fireboard or metal strip in the chimney opening, and stretch fine-meshed wire screening over the top of the chimney. (See "Animal-Proof Closet," page 383.)

Screens and Awnings: See page 172 for information.

Add These Items to the Final Check List (page 408):

1. Write ahead to various utility companies, notifying them of your return.
2. Make notes of painting jobs and repair work to be done in the spring.
3. Make a list of things to buy before spring.

4. Provide for summer pets. We are sure you don't do it, but nothing could be more cruel than to adopt and pamper a dog or cat during the summer months, only to leave it, friendless and alone, to face starvation and freezing temperatures after you have gone. If it is impossible to find a good home for the pet, any humane society will put it painlessly out of the way for a very small fee.
5. Store porch or garden furniture (page 69).
6. Take back to the city any canned or bottled goods that may freeze.

PART III

OPERATION AND MAINTENANCE OF THE HOME

SECTION EIGHT

The House Itself

CHAPTER XXVI

HEATING AND AIR CONDITIONING

Nothing is more important in terms of family comfort than the house heating system. Without proper heat, no one can be comfortable. How satisfying is a delicious meal, beautifully served, in a chilly dining room? How much pleasure can one get from a befrilled dressing table, before which one sits and shivers?

We all want the utmost in comfort from the furnace or boiler that sends heat to our radiators or registers throughout the house. To get it we must know three things:

1. Our family standards of comfort.
2. How to take care of the heating plant.
3. How to tell when something goes wrong.

Relatively few laymen are equipped to act as their own heating experts, when it comes to installing, repairing or modernizing a heating plant. But a little knowledge and attention can help us to select the right kind of equipment, to keep it in good condition, and to have professional service when it is required.

A heating system should be treated like an automobile. We should understand in general the way it works, so we do not mistreat it. We should have it regularly cleaned. We should know what to do to increase its efficiency, so we are not helpless when the man of the house is away from home. But we should never attempt to tamper with any of its parts in a misguided effort to right defects. We should let the "overhauling" of a heating system be done by experts; call them in frequently enough to prevent serious damage. Well cared for by men

who know their jobs, a heating plant, like an automobile, will give years of practically perfect service.

What is Comfort?

Actually, the kind of service a heating system gives depends upon varying standards of comfort. Comfort standards are not absolute. One man's comfort may be another's discomfort. Comfort is affected by the physical condition of the individual—his age, sex, clothing and activity as well as the climate and the season of the year. Everybody has heard persons in the same room complain because it was too warm or too cold at one and the same time. The best that can be hoped for is a condition in which the majority of the people feel comfortable. Comfort investigations conducted by the Research Laboratory of the American Society of Heating and Ventilating Engineers, in cooperation with the United States Bureau of Mines, show that 97 per cent of the varying age groups tested had the same comfort reaction in winter. The exceptions to the rule must compensate with additional or lighter clothing.

The temperature of the healthy body is practically uniform at 98.6° F., winter and summer. When we feel warm or cold, we refer only to a surface condition. The human body is a heat-making machine. The heat it produces must be dissipated, or the body would burn up. The body gets rid of its heat in four ways:

1. By radiation of heat from the skin to cooler objects surrounding the body.
2. By evaporation of moisture exuded from the pores.
3. By circulation of air cooler than body temperature around the surface of the body.
4. By respiration, some heat leaving the body with the breath.

A heating and air-conditioning system is the artificial means by which we aid our bodies to lose heat comfortably. In winter we want the system to heat the objects in a room so our bodies won't radiate heat to them too fast; we want the air to be moist so we won't lose heat-laden moisture to the air; we want the air which circulates around us to be warm so it won't extract too much body heat from us as it circulates. In summer, just the other way—we want cool objects, dry cool air, to help us lose undesirable surface body heat.

Here, then, is the reason for linking those words "heating and air-conditioning." Air-conditioning, roughly, comprises all the "extras"

beyond heating the air itself. True air-conditioning in winter filters, circulates, humidifies and heats the air; in summer it filters, circulates, dehumidifies and cools it. Air cooling therefore is merely one function of air-conditioning, and a summer function at that. What we call heating, in many homes, actually is winter air-conditioning.

Broadly speaking, most of us want to have our homes at a temperature of between 68 and 72 degrees, in the winter, between 70 and 85 in summer. If there is moisture in the air we can do with a lower temperature; if the air is dry, we require higher temperature for comfort. If there are drafts, we feel chilly because the surface of our bodies is losing more heat. If there is no circulation, we feel stuffy.

But by comfort, most of us mean more than actual loss or retention of body heat. We mean pleasant, easy breathing due to absence of dust in the air, no irregularities of temperature that cause colds in the head. We also mean having little manual work to do to keep the heating system in smooth working order. We mean preserving our physical well-being without running our heating costs too high.

This kind of comfort may be secured with various kinds of heating equipment, depending once again on our own personal standards. An *ideal* heating system would provide the following, but it is up to each of us to choose which of these things we can sacrifice without too much discomfort, either physical or financial:

1. Heat from a central source, adequately distributed to every room.
2. Automatic fueling to eliminate the traditional drudgery of tending the furnace.
3. Controls for comfort and for safety.
4. Low fuel and operating costs.
5. The extras of winter and/or summer air-conditioning, as they can be afforded.
6. A supply of automatic hot water all year round.

Kinds of Central Heating Systems

There are three general classifications of central heating systems, all of which may be used with the type of fuel available, whether it be oil, coke, coal, or gas, and may be used with automatic controls.

1. *The warm-air system:* Air is warmed by direct contact with the heating surface of the furnace, and distributed through the house by means of ducts and registers. It may operate by gravity, or the air may be forced through the ducts by a fan or blower. The larger the blower

and ducts, the better the performance, especially if it is to be used for circulation of air in the summer, for a larger volume of cool air is necessary for comfort than warm air.

A warm-air system delivers heat very rapidly, once the fire has been started; it is easily adapted to air-conditioning by the addition of filters, humidifying pans and blowers for forced circulation of air; it can be used in the summer even without special cooling attachments, circulating cool night air from outside or basement air throughout the house; and its initial cost is relatively low. Its disadvantages are that it does not provide heat by radiation to offset the feeling of coldness which results from radiation by human bodies to cold objects such as windows; it will carry noises as well as warm air from room to room if not properly designed; and it is more difficult to adapt to modernization plans because the ducts cannot be "snaked" through existing walls as can steam or hot-water pipes. The domestic hot-water problem is not as satisfactorily solved as part of a warm-air system as with a radiator system. Usually a separate water heater is provided.

2. *The radiator system:* Hot water, steam or vapor is created in a boiler, and is delivered to radiators or convectors (having thinner fins or more extended heating surfaces) that in turn give off heat to the air of the various rooms. Its advantages are the provision for more warm surfaces in each room to radiate heat to walls and objects, including people, offsetting to some extent human radiation to cold windows; the more uniform heating effect, since air loses heat more rapidly than water and metal; and the ease with which domestic hot water may be provided. Its disadvantages are its slower response to firing, necessitating a wait while the boiler creates steam or hot water or vapor at the call for heat; its use of radiators, which do take up space in rooms unless they are specially built into walls; the slight hazard of hot surface against which a child might fall, and the necessity of using a separate unit with which to filter, cool or adequately humidify the air.

3. *The split system:* This is a combination of warm-air and radiator heating. It uses a boiler in which to produce steam, vapor or hot water, which in turn heats both air and radiators. The air is circulated, filtered and humidified in a warm-air system and delivered to most of the rooms through ducts; radiators, served by steam or hot-water pipes, are placed in difficult-to-heat rooms, like bathrooms and closed porches. It provides some advantages of both warm-air and radiator systems. With it you easily can have full air-conditioning; you can circulate night air in summer wherever the ducts lead; there

is a long carry-over of heat because it comes from water before it reaches the air, and you can heat domestic hot water year-round as part of the house-heating plant. This system, of course, is specified for large or rambling houses. It is an ideal system but usually costs more than warm-air or radiator systems alone.

How to Take Care of the Heating System

No matter how good the equipment the way it is installed can make or break it. Choose a reliable dealer or contractor for this work. Once it is in, the chief problems the householder has in caring for a heating system are:

1. Seeing that it is regularly cleaned and inspected.
2. Knowing how to operate it.
3. Understanding what is needed to improve or add to its efficiency.

Cleaning and Inspection: At the end of every heating season call in the dealer or representative of the manufacturer, a heating contractor, fuel company expert, or gas company service man to clean the flues and firepot, check proper operation of burners and controls, and look over the whole system. Coal-burning systems sometimes need cleaning more than once a year, gas perhaps every two years. When the heating man comes to clean the system, that is the time to mention what defects, however minor, were noticed during the winter, so that defective parts may be repaired before serious damage or even injury develop. Waiting until cold weather begins again may mean doing without heat on a day when it is required.

Some householders do their own cleaning of coal furnaces and boilers. It is impossible to do a really good job without the wire brushes, vacuum cleaners, and other implements of the trade which remove ashes and soot that sift into pockets and crannies. Soot and ashes, collecting in places which are hard to get at, under certain moisture conditions will set up acids inside a firepot that cause deterioration of the metal. The furnace or boiler should be thoroughly cleaned to prevent this. Sometimes working parts should be lubricated during the idle season. These special precautions are particularly advisable in damp cellars. Wherever cellar dampness prevails, heating systems must be given especially careful attention.

Gas and oil burning heaters have no ash problem but should nevertheless be cleaned annually. Working parts of burners and controls should be lubricated, and exposed metal parts greased, when necessary

to protect them from corrosion. When parts are painted, they need no further protection. If you have a professional heating man do the job every spring, you will increase the life of your heating system.

Operation of Heating Plant: Every householder should know how to start his heating system, how to control the heat it gives, how to use fuel economically and efficiently. More than this, at least two members of the household should understand the operation of the heating plant so the heater need never go unattended.

Practically every plant sold brings with it manufacturer's instructions for operation and care. They should be read carefully, followed meticulously. The supplier of the fuel is always glad to advise the householder how to use the fuel efficiently and economically.

The way a system turns on varies with how it is fueled. Hand-fired coal or coke systems require building a fire, adjusting dampers, etc. Oil-fired systems are turned on by snapping an electric switch. Gas-fired heaters usually require the lighting of a pilot. Ask the gas company to show you how the first time. New gas-heating equipment with fully automatic electric ignition requires no more than snapping the electric switch and—if it is a year-round conditioning system—changing controls and fan from summer to winter operation. Stoker-fired coal heating plants usually turn on and off as easily as oil or gas, but require the building of a small charcoal fire or use of a specially designed kindler to start. Some stokers have automatic ash-removal devices; others, including most coke stokers, require partial manual removal of ashes, and—in the case of bituminous stokers—manual removal of clinkers too from the top of the fire.

Systems employing boilers should be drained if shut down for any period of time during the winter, to guard against freezing. Before starting the fire, be sure there is enough water in the boiler for safe operation. Steam boilers have the proper level shown on a gauge glass. Hot-water boilers should be filled until the proper pressure for altitude is shown on the boiler gauge.

I. Hand-fired Heating Systems

Most detailed information is required by householders who have hand-fired coal systems; these make up 67 per cent of the total number of families having central heating in their houses, at last report. For this kind of heating system, it is well to know something of how combustion is aided or slowed up and how to lay a fire.

There are four major controls for combustion on a hand-fired coal furnace or boiler.

1. *The ash-pit damper* (or draft door) which is opened to obtain faster combustion and closed to check combustion, is located at the bottom of the furnace or boiler below the grate line. Through it air is supplied to the fire to support combustion. For complete burning up of every combustible atom in the coal, each atom of carbon must be intimately mixed with two atoms of oxygen. Therefore the air supplied here is of utmost importance. The ash-pit damper is operated in conjunction with

2. *The check damper* (or check door). The check damper acts as brake while the *ash-pit damper* acts as accelerator for the fire. The check damper is located either on the flue pipe or on the flue hood, which is the intermediate section between the furnace or boiler and the smoke pipe, and the ash-pit damper is below the grate line. As a general rule, the check damper is closed when the ash-pit damper is open, and opened when the ash-pit damper is closed. Don't confuse it with

3. *The flue-pipe damper* (or turn damper) which is installed on the inside of the flue-pipe between the check damper and the furnace, and has only a handle on the outside of the flue-pipe for manual adjustment. The flue-pipe damper should be set as far closed as it can be without interfering with the draft in the firebox, but never completely closed, lest you produce poisonous carbon monoxide in serious quantities. There is a small opening in the flue-pipe damper even when closed, so serious conditions are not apt to arise, but watch out.

To determine the right position for the flue-pipe damper, close it entirely, open the feed door damper (see No. 4, below) and hold a candle or a lighted match there. If the flame is sucked in toward the firebox that indicates there is sufficient draft, so the flue-pipe damper may be left in the closed position. (It never closes enough to be actually airtight, remember.) However, if the flame of the candle or match is blown outward, toward you, that means there is not sufficient draft and the flue-pipe damper should be opened a little more.

Once set, the flue-pipe damper seldom should be touched, just left normally in the position which allows the best draft with the least opening. Exceptions are when the fire is being shaken down, for by opening the flue-pipe damper, dust can escape up the chimney instead of into the cellar; or when you want a quick pick-up of a fire which has burned low. In either case, it should be left open only a brief time.

4. *The feed door damper* (or feed slot) is an opening in the furnace door, above the ash-pit damper. The feed door damper should be at least

slightly open at all times, to assist in igniting gases over the fuel bed.

For average daily operation, after the fire is started and thoroughly ignited, the fire can be controlled with the check damper and the ash-pit damper alone. If a moderate fire is required, open the check damper wide and close the ash-pit damper. As additional heat is required, close the check damper partially or fully, and open the ash-pit damper partially or fully. At night, before coaling the fire for the night, shake the grates gently until a red glow appears in the ash. Do not shake hard enough to disturb a bed of ashes on the grate, which will help keep the fire burning all night.

More air above the fuel bed is necessary with bituminous coal than with anthracite. One must learn by practice how to adjust the feed door damper.

Caution: Be very careful about banking the fire at night and adjusting dampers, as many accidents are the result of carbon monoxide poisoning or "smoke explosions" from incomplete combustion and the accumulation of gases. (See pages 101 and 425.)

You can save yourself time and trouble by installing a thermostat which automatically lifts the ash-pit damper and simultaneously closes the check damper when more heat is required, reversing the process when less heat is necessary. Thermostatic control is not confined to automatic fueling. Even with a hand-fired coal system, fiddling with dampers can be eliminated almost entirely by means of thermostats, which cost only a modest amount. An adequately sized heater plus a thermostat makes it possible in severest winter to obtain firing periods of at least ten hours without human attention.

With *hand-fired coke furnaces or boilers,* the same procedure for laying the fire and setting the drafts is followed as for hand-fired coal, except that it usually is not necessary to open the feed door damper. Additional air over the firebed is not required, coke being rough in shape and fitting together so loosely that air penetrates the fuel bed. The main problem with coke is in controlling the fire so that it doesn't burn too rapidly. This is done with less shaking of grates and less draft.

Another help in the operation of hand-fired heating plants is a removable ash-pit into which ashes fall by gravity. It can be slipped out from under the furnace or boiler and emptied every few days (depending on the weather) without any shovelling of ashes. It also can be used with anthracite stokers having no ash-removal device, and with magazine feed boilers.

II. Stoker-fired Heating Plants

There are four kinds of stokers, varying in automatic operation and fuel used. It depends on which kind is used how much or how little the householder himself has to do.

1. A fully automatic anthracite stoker takes coal from the bin, feeds it in to the firebed from the bottom, removes the ash, and places it in a sealed container. There is nothing to do here but see that there is coal in the storage bin, turn on the electric current when you start your heating plant in the autumn, and see that the sealed ash container is emptied, perhaps every twenty or thirty days. It is even possible to have a Season Pit, which holds all the ashes of one heating season!

2. Some anthracite stokers require manual filling of the hopper every two or three days, plus periodic emptying of the ash container.

3. Bituminous stokers usually require filling the hopper with coal at certain periods and removing ashes and clinkers by hand. There is at least one stoker on the market which dumps the ashes in a bin; but with it a special bituminous coal must be used. Also, clinkers must be removed daily from the top of the retort, which is equivalent to the grate of a hand-fired heater. This is done manually, with a pair of tongs.

4. Coke stokers usually are semi-automatic, putting the coke on the fire from above but not removing the ashes automatically. Coke stokers are specially designed for coke and are different from anthracite or bituminous stokers. Underfeeding the fire by means of worm gears long was impossible with coke, as the roughness of the coke wore out the metal. But an underfeed coke stoker is being worked on now, using special sliding plates and grates. This type stoker also has a sealed storage bin and an automatic ash removal device.

Coke stokers usually deliver the fuel to the fire from above, by means of alternately sliding plates, operated by a small motor. The hopper holds from 250 to 300 pounds at a time. These stokers are inexpensive to operate since less power is needed to slide a plate in and out than to drive a worm gear which actually forces coal on to a fire.

III. Magazine Feed Boilers

These are boilers with special coal hoppers built into them through which the coal feeds itself to the fire by gravity. They are semi-automatic, for the hopper has to be filled with coal, as with the bituminous stoker, although it holds enough for a full twenty-four hours in zero

weather. The grate must be shaken, too. Gravity ash removal methods may be used with magazine feed boilers so that all shovelling of ashes is eliminated.

IV. Oil Burners

Oil burners may be bought as conversion units for existing furnaces and boilers or as boiler-burners and furnace-burners complete in themselves for use with radiator or warm-air systems.

There are two general classifications: the vaporizing and the atomizing. *The vaporizing burner* transforms the oil into vapor by bringing it in contact with a hot surface, either a pot or plate. *The atomizing burner* breaks the oil up into small droplets by forcing it through atomizing nozzles or spinning it off a cup, the oil then being burned in suspension. Vaporizing burners are always gravity-fed; atomizing burners employ a pump to deliver the oil to the burner. Vaporizing burners usually require Number 1 grade of fuel oil, atomizing burners Number 2 or Number 3.

These are the two principles by which oil burners operate, but they are more often described by the way they *look*—namely, "rotary" oil burners or "gun" oil burners. Rotary burners may be vaporizing or atomizing; gun burners are always atomizing. Both kinds may be added to already existing furnaces and boilers, but generally give more reliable and economical service if purchased as parts of complete heating units.

See that the burner and installation comply with the new Commercial Standards which have been drawn up by the National Bureau of Standards of the U. S. Department of Commerce, called Standard CS 75–39. Equipment which has been tested and approved bears a label certifying compliance with CS 75–39. Be sure the dealer who installs the burner adjusts and tests it under these provisions as well.

All oil burners are easy to operate, but it is essential to read and understand the printed instructions that come with them, and to call in competent service if anything goes wrong. Don't ever tinker with valves or burner parts. It is not only safer but better economy, in the long run, to call in the service man.

Starting an oil burner in the fall consists of turning on the switch which sets the oil burner in motion or lighting the gas pilot. It is always wise to have the equipment inspected by your service man prior to the heating season, to make sure its operation is perfect.

If the oil burner will not start, there are at least six things which the householder should check before calling in professional help:

1. See if the thermostat is properly set. It may be calling for too low a temperature.
2. See if the main electric switch for the burner is in "on" position. (Or the gas pilot is lit.)
3. See that electric fuses are not blown, and that there is electric current available at the oil burner.
4. See if the water in the boiler gauge glass is at the right height. (If you have a boiler, of course).
5. Examine the pressure gauge or thermometer on the boiler to find out whether the limit control has stopped the burner. If it has, *wait* until the pressure or temperature drops below the setting on the control. This is a safety device and should not be interfered with.
6. Check your oil supply tank—it *may* be empty.

If all these things are in order, press the manual reset button on the burner control box; if the burner starts and stops again, *wait five minutes* for oil vapors to be drawn out of the combustion chamber before pressing the reset button again. If it stops again or appears to be operating abnormally, call your service man.

V. Gas Burners

Gas burners require different adjustments for different types of gas. The company making the installation takes care of this, so it need not concern the householder. Gas may be used either in boilers or furnaces originally designed for other fuels. As with oil burners, they should be adjusted or repaired only by qualified service men. A thermostat automatically turns on the gas when heat is required, and turns it off when no longer needed.

Controls for Heating Systems

There are five essential safety controls for radiator and warm-air systems. One type is used for all kinds of systems which are automatically fueled. This control is the *safety switch,* which is a flame detector in the combustion chamber, or the *stack switch* which shuts off the oil or gas burner or the stoker if anything goes wrong with the ignition system. In addition to it, at least one other control is necessary, depending on the kind of heating system you have. These controls are:

1. For steam or vapor systems, a *pressure control,* which limits pressure in the boiler.

2. Also for steam or vapor, the *low-water cut-out,* which stops ignition in case the water in the boiler gets too low, preventing boiler damage.

3. For a hot-water radiator system, the *water temperature limiting switch,* which guards against overheating of water by keeping its temperature somewhere at or below 180–200 degrees F.

4. For warm-air systems, the *air temperature limiting switch,* which prevents the air temperature from exceeding safe operating conditions in the event filters become stopped up or the fan does not operate or all duct dampers are closed. This switch sometimes is combined with a *temperature control* in a forced air system, which prevents the air from moving until it is heated enough, so as not to cause a cold draft.

An additional control frequently used in steam and vapor systems is the *aquastat,* which permits the operation of a boiler at a temperature approximately 160–180 degrees in the summer time, without heating the house.

Another optional control is the *flue pressure switch,* used to break the electric circuit to an automatically fueled warm-air furnace in case of improper fuel adjustment, so that the furnace will not run until it receives manual attention.

How to Use Fuels

Obviously the kind of fuel burned in a heating plant affects what should be known about its operation. Buying the exactly right fuel for the kind of equipment installed is essential. When planning a new house, the choice of fuel naturally is governed by the total cost of using that fuel. This includes the price of the fuel itself, the cost of servicing the equipment, the cost of any electricity which may be used for operation, and the original cost of the equipment. Once a choice has been made and equipment installed, each family confines its attention to the problem of how to use that particular fuel economically, easily, efficiently and safely.

The smokelessness of the fuel should be taken into consideration by the householder, in choosing both fuel and equipment, however. The smoky fog (called smog) which hangs over such cities as St. Louis and Pittsburgh is a menace which can be avoided by smokeless fuel or smokeless burning of fuel. A St. Louis ordinance now requires that all high volatile fuel, containing volatile content in excess of 23 per cent, be burned automatically; fuels with less than 23 per cent volatile

matter are permitted in hand-fired furnaces and boilers. Attention to the problem of helping to create a smokeless city is important to the community at large and to any individual family living in that city.

Coal and Coke

There are three general kinds of solid fuel: anthracite, bituminous and coke. Choice usually depends on price.

Anthracite and bituminous coal both are derived from ancient vegetation, but anthracite has been subjected to more pressure over a longer period of time in the earth, with the result that anthracite is more nearly pure carbon while bituminous coal has varying amounts of volatile matter (gases) in it.

Anthracite, or hard coal, is a more hard-packed lump than bituminous, which is called "soft coal."

Anthracite burns smokelessly and often with as little as 9 per cent ash. Bituminous coal, not as well standardized as anthracite, has much smoke, much ash, or moderate smoke and moderate ash, depending upon its quality.

Coke-oven coke is the major by-product of bituminous coal created in the production of manufactured gas. The residue of this process is lumps of carbon from which volatile matter has been removed. It is smokeless, like anthracite, has little ash, and its availability usually varies with the proximity of a manufactured gas or steel plant. Petroleum coke—available as fuel near refineries—is a by-product of the manufacture of petroleum products. It is similar to coke-oven coke in its use, but burns faster and has practically no ash.

Be careful not to confuse coke with briquettes, which are man-made from screenings of bituminous or anthracite or both coals, compressed together. Briquettes seldom are used for central heating plants in this country.

When using coal, always keep the firepot at least full to the level of the feed door sill with anthracite or bituminous coal; *coke* should be heaped as full as possible. A thick fire is more economical and more easily controlled.

When banking the fire at night, keep at least a small spot of bright light showing at the top of a coal bed, preferably at the back of the fire. This is especially important with bituminous coal, since the exposed flame together with air supply above the fire makes for proper combustion of the gases rising from the fuel. Anthracite and coke give off little such gas.

Anthracite is sold in different standardized sizes, each with a name

indicating what sized openings in a round-meshed screen it will pass through. The size used depends on the size of the fire-pot. The larger the fire-pot, the larger the coal that may be used. The advantage of using large coal in hand-fired systems is that it makes possible a longer firing period without manual attention. With stokers, small sizes are used.

Table of Anthracite Sizes

System	*Name*	*Screening*	*Fire-pot not less than*
Hand-fired	Broken	4-3/8″ – 3-1/4″	24″ wide x 16″ deep
	Egg	3-1/4″ – 2-7/16″	24″ wide x 16″ deep
	Stove	2-7/16″ – 1-5/8″	16″ wide x 12″ deep
	Chestnut	1-5/8″ – 13/16″	20″ wide x 10″ to 16″ deep
	Pea	13/16″ – 9/16″	Any with good draft
Magazine feed boilers and stokers	Buckwheat	9/16″ – 5/16″	Any size magazine feed boiler or stoker specifying it
Stokers	Rice	5/16″ – 3/16″	Used only with forced draft, either stokers or motor-driven blowers

Sometimes combinations of large and small sized anthracite are used, to effect savings in fuel bills. For fire-pots 15 to 18 inches deep, pea or nut coal may be used as a two-inch dressing over egg coal. Fire-pots 12 to 15 inches deep can take stove coal with a top dressing of pea or nut. Care must be taken not to use lumps of coal which are so large that they do not burn completely, for partially burned coal is a waste of money. Clinkers also are wasteful, because they shut off the necessary supply of air to unburned fuel in the firing chamber.

Bituminous coal varies so much in different parts of the country that definite advice for every kind is impossible. Some bituminous coals are of high quality, competing with anthracite; others are responsible for the large part of the "smog" over many industrial cities.

There are many graduations of hard and soft coal, ranging as follows:

Table of Coal Hardness

Type	*Characteristics*
Anthracite	Hard; little coal dust or gas; burns with blue flame; little ash.
Semi-anthracite	Almost as hard; but more coal dust, yellow flame.
Semi-bituminous	High-grade soft coal; low-ash content.

Type	*Characteristics*
Bituminous	Soft coal; considerable volatile matter; varying ash content.
Sub-bituminous	Low-grade soft coal; contains water combined with coal.
Lignite	Brownish, woody-looking; contains more than one-third water.

Table of Coke Varieties

Type	*Characteristics*
High-temperature coke	Hard; abrasive surface; generally grayish; little ash.
Low-temperature coke	Softer; less abrasive; blacker; little ash.
Petroleum coke	Hard; dark gray or black; no ash; limited supply available.

The exact point at which bituminous coal becomes hard is difficult to determine definitely, since Mother Nature engineers the transformation and she never has followed set standards. Soft coal is not as well standardized in size as hard, and the sizes are affected by the fact that the coal breaks more easily in handling. Bituminous coal in pieces ½ to 3 inches across requires the least attention from the householder. If high-quality bituminous coal is available, it will heat a house efficiently and economically. It has an enormous range of price.

Coke

Coke, properly handled, with a large fire-pot and carefully regulated drafts, has become more popular of late as a house-heating fuel. Coke fires are easy to attend because coke is light in weight, thus shovels easily, and also has little or no ash.

Coke is sold for domestic use in the sizes corresponding to the larger sizes of anthracite and usually called lump, egg, nut and pea. You cannot store as much coke in a given space as you can coal, however, because of its light weight.

Starting Coal and Coke Fires

Bituminous coal fires start more easily than anthracite or coke, because of the volatile matter in the coal. Coke has the highest ignition point of the three, therefore takes longest to start at the beginning of the season.

Hint: A chemically treated bag full of charcoal and rosin, known as a "kindler," can be set on the grate and lighted, to do away with the need of starting a wood, charcoal or paper fire before shovelling in coal of any kind. These kindlers cost about ten cents a package. Or you might use a gas pilot light instead of kindling, if gas is available.

To start a bituminous fire, use kindler or build a wood or charcoal fire in the fire-pot, put on a small quantity of bituminous coal, and build up to a deep fuel bed, with coal heaped high on sides. Place fresh charges on one side of the grate only, leaving part of the fuel bed uncovered. The volatile matter rising from the freshly fired coal is ignited by the red-hot coals of the uncovered part of the fire and a large part of it burns. Next time, place fresh coal on the other side of the grate. Never smother fire completely with coal. Leave a good bright flame showing. Usually more draft is required to start a bituminous fire than an anthracite fire.

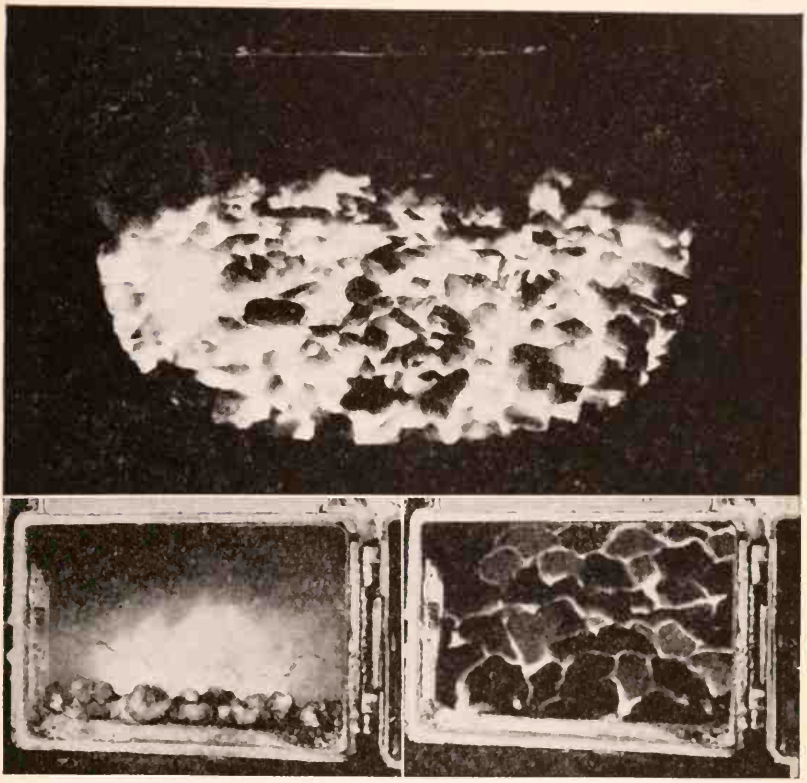
To start an anthracite fire, use a kindler or wood fire first, then shovel the coal in so it will fall flat, but don't rake it smooth. Don't heap the fire in the middle; that creates a draft at the edges which makes for too rapid burning there. A rush of cold air to the burned-out spots lowers the temperature of the whole fire-pot. A live spot of flame should show at all times.

Shake the grates as little as possible, never vigorously, and stop when a live coal drops into the ash pit. Leave a light blanket of ash in the fire-pot in mild weather. Never let the top of the fire-bed get much lower than the level of the door through which the coal is shovelled.

To start a coke fire, start with a wood fire, a kindler, or a gas pilot light, add the coke in small quantities (layers of perhaps 2 or 3 inches thick), spreading evenly over grate area. When the fire is burning, the fire-pot should be completely filled—above the fire door, contrary to the usual practice with bituminous or anthracite. You are not using more fuel, because coke's light weight makes it necessary to put a larger volume into the firebox to approximate the same weight of bituminous or anthracite coal.

How to Tell if the Fire Is Right

Too bright a fire in the coal-burning boiler or furnace usually means waste of fuel. There should be enough bright coals and bright flame showing to make sure the gases distilled off the coal are burned instead of being allowed to escape up the chimney, but there must be enough space for air supply above the coal bed. With coke and anthracite, you should just be able to see the incandescent lumps underneath the



Top: This is the way the fuel bed of hand-fired chestnut anthracite looks when it is burning properly.

Lower left: This is the way the fuel bed of hand-fired coke should *not* look.

Lower right: This is the way it *should* look.

top layer, and the only flame visible should be a thin blue flame, which means burning gases. Even with bituminous coal, too bright a fire, especially too bright a glow in the ash-pit, means the coal is being burned too fast.

Storage of Coal

You can get most coal in a small space if you use anthracite. This is because its average weight is 55 pounds per cubic foot, while bituminous weighs 45 pounds per cubic foot, on the average, and coke weighs about 30 pounds per cubic foot. Thus in the average size bin you can store

at one time more tons of anthracite, fewer of bituminous and fewest of coke.

If two different sizes of anthracite are used, keep each in a separate bin. Calculate about 36 to 40 cubic feet of storage space per ton. It is a good idea to paint lines inside the bins to indicate ton levels and keep track of the supply on hand.

If you wish to lay in large supplies of bituminous coal, or the light porous lumps which are coke, to save on costs by quantity buying, it may pay to enlarge your bin.

Disposal of Ashes

If ashes are not handled automatically by a stoker with ash-removing device, or with a hand-fired coal system, never allow them to pile up in the ash-pit. If they should come within four or five inches of the grate, there is the possibility of burning the grate through. About 99 per cent of all grate troubles come from neglect of ash-disposal. Grates should last the lifetime of the furnace, with care.

Before cool ashes are taken out of the ash-pit, a light sprinkling of water will help prevent clouds of dust and minimize the possibility of some hot ashes remaining in the ash receptacle. A sprinkling can with an extra-long spout enables the user to sprinkle water inside the ash-pit. There are ash sprays which may be attached to heaters, and are as easy to operate as a bathtub shower.

Properly designed ash cans with covers, a tight coal bin with cracks caulked, a rake with a blade that fits easily into the ash-pit—all help eliminate dust and fuss.

Sifting of ashes to salvage still-burnable coal may salvage $10 to $15 worth of anthracite a year, but if you are losing that much unburned coal, something is wrong with your heating equipment or your choice of sizes of anthracite. Better have some expert advice before the next heating season.

To sift ashes, sew a piece of canvas up to form a sleeve that runs from the discharge end of the sifter into the receptacle in which the ashes are emptied. This saves raising dust, while sifting.

Oil

Oil generally used for house heating is standardized in three grades. All are light oils, but Number 1 is the lightest, being either kerosene or only a little heavier than kerosene, Number 2 is medium weight, Number 3 the heaviest of the domestic oils. The heat content increases as a heavier grade is used. Number 1 is available practically everywhere in

the United States, Number 2 is the common grade in the East and Number 3 the common grade in the Middle West.

The Underwriters' Laboratories specify the oils which may be safely burned with each type of burner they list, and the grade is shown on the safety label attached to the burner. The grade determines to a considerable extent the cost of heating. Each grade has been well standardized by the National Bureau of Standards, U. S. Department of Commerce. Stick to the grade of oil recommended.

Oil usually is stored in 275-gallon tanks installed on the inside of a building. Local ordinances stipulate that they must have a supply line and vent of adequate size. It is a good idea also to have an antisiphon valve so if the oil feed to the burner is damaged, oil cannot siphon from the tank. In the case of larger tanks, installed outside, oil may be fed from the storage tank to a small inside auxiliary container, vented to the outside air to relieve pressure in the tank, or in some cases where the line is well-vented the auxiliary container may be eliminated.

Gas

Gas is of three kinds: natural, manufactured and mixed.

Natural gas, as its name implies, is the kind that comes right out of the earth. It is approximately twice as rich per cubic foot as manufactured gas in heat-producing power. The heat content is about 1100 B.T.U.'s (British thermal units, standard heat measuring unit) per cubic foot.

Manufactured gas varies in its heat value, according to its manufacture, but 536 B.T.U.'s per cubic foot is the average value. Usually local ordinances set standards for its heating value.

Mixed gas, as its name implies, is a mixture of natural and manufactured gas. The heat content varies in different places, according to the proportions of the mixture, but is kept constant in any one locality.

The choice between natural, manufactured or mixed gas in any community is decided by the public utility on the basis of which will give the best service at the lowest cost. Prices of gas-making materials and distance from sources of natural gas exert great influence on this decision. For example, in the heart of Texas or Oklahoma, the natural gas area, that alone is used. In New England, near supplies of coal and oil from which gas is made and far from sources of natural gas, it is more economical to use manufactured gas than to pipe natural gas tremendous distances. In the Middle West, much mixed gas is used because of the ready availability of coal and oil and the moderate distances from suitable sources of natural gas.

Gas is clean and dependable, and may be used easily and efficiently

for house heating, wherever its cost compares favorably with the cost of other fuels.

Ways to Save Fuel

The high cost of fuel is almost as popular a subject for a dirge among home-owners as the high rate of taxation. Yet there are several simple steps to lessen the fuel bill, some requiring large and some small financial outlays in the beginning. They include:

I. Proper Size Boiler or Furnace

Too small a heating unit accounts for a disproportionate increase in the consumption of fuel, particularly when outside temperatures drop below 20 degrees F. In a cold climate, a larger heating unit will use less fuel than a small heating unit working at top capacity for long periods of time. Too small a unit, forced, sends heat up the chimney as well as through the house. Too large a unit, on the other hand, will increase the fuel consumption moderately.

II. Efficient Combustion

Probably the most prolific cause of fuel waste is inefficient combustion. Yet the efficiency of combustion can be checked by instruments which fuel suppliers usually have available. These instruments analyze the stack gases to determine how effectively the fuel is being consumed.

To increase efficient combustion all you may have to do is remove soot from the flues or scale from the water surfaces of the boiler, perhaps correct a defect such as faulty vent valves or a break in the pipe insulation.

III. Sufficient and Properly Balanced Radiation or Distribution of Air

The entire heating system must be amply sized, properly proportioned and laid out. If too few or too small radiators are employed, too small or too few ducts installed, it results in a waste of fuel. Every heating system must be well designed from the start, if it is to run economically and comfortably.

IV. Weatherstripping, Caulking and Storm Windows

Making a house tight so it will not lose its heat to the outdoors and so a heating system need not overwork to bring the temperature to the comfort point, is the first step, apart from the units of the heating system itself, in fuel saving.

If all windows are equipped with double-glazing or storm sash for winter, it is estimated a saving of 10 per cent of fuel costs can be made. These second panes of glass can go inside or outside the windows, usually replacing summer screens. They can be purchased in stock sizes, or made to fit your window frames by a local carpenter.

Weatherstripping all windows and doors to cover the hairline cracks through which there is some infiltration of air even when the windows and doors are closed, will save about 5 per cent of the fuel cost. Wood or felt weatherstripping should be installed on the outside of the upper sash and the inside of the lower sash. It must be replaced every so often. Metal weatherstripping, generally considered most effective, usually is installed in grooves cut in the sash, which means removing the sash to do it. Properly installed, it is practically invisible and permanent.

Weatherstripping and storm sash together can save 15 per cent of the fuel cost. In addition, it may pay to fill all the tiny crevices at the junction of window frames and outer walls with caulking compound, inexpensively purchased at a hardware store. This can be done by the householder himself, following instructions given with the caulking compound.

V. Insulation

Preventing the passage of heat from inside your house, through walls and roof, to the outdoors is a great fuel-saver. This is done with various kinds of insulation. There are three main types: fills, boards and reflective.

(*a*) Mineral wool, glass wool, or other material may be inserted between inner and outer walls in batts, nailed into place along the studding in blankets, blown into walls and roof by means of a pneumatic hose, or "poured" between the studs.

(*b*) Rigid board may be used either as sheathing for the house, as its inner wall surfaces, or as a plaster base.

(*c*) Foils or reflective metal surfaces, from which heat waves are reflected, may be built into the walls and roof.

All these means of keeping heat in during the winter will also serve to keep heat out in summer, although in the case of reflective insulation, the shiny surface should be repeated on the outside surface of the insulation as well as the inside, to be more effective.

If possible, the whole house should be insulated; if this represents too much initial cost, at least do the roof. Heat rises through a house, and unless there is a barrier at the roof, it passes right through at a fairly

constant rate. That is why snow melts from the tops of uninsulated houses rapidly. If the snow lies on a roof, it means the roof is not being warmed to any appreciable degree by the house-heating system.

An attic which is not used for living purposes may be insulated with a layer of insulation on the floor of the attic. If the attic is finished, the insulation should be placed in the ceiling and walls of the attic rooms.

Certain kinds of roofing shingles and sidings have some insulation value and will help keep heat within a house. Dead air spaces also aid in insulation.

Caution: If a new house is to be artificially humidified in winter, it may be wise to install vapor barriers in the walls as they are built, so that moisture vapor will not penetrate within the walls and condense into real water under certain temperature conditions. If this happens, fungi and rot can start.

If the house is already built, vapor barriers are too difficult to install and careful control of humidity must be substituted. (See chart on page 437.)

VI. Thermostatic Control

Thermostats which keep the temperature of a house at an even level cut fuel costs because there is no opportunity for an overheating period which consumes much fuel. Thermostats customarily are located about 5 feet up on an inside wall of the most-used room. If located on an outside wall, they will produce a higher temperature for the house as a whole than that indicated on the thermostat, because they will respond to the cooler conditions at outside walls.

Installed on inner partitions, thermostats are more likely to reflect true comfort conditions. If an outside wall must be used, because there is no other place for the thermostat, mount it on a column or suspend it from the ceiling.

To get the utmost in fuel-saving, do not reset a thermostat often. From 70 to 72 degrees F. for the daytime and 60 to 65 for the nighttime will satisfy most people, if humidity conditions are right. Indeed, studies recently have been made indicating that great fuel economy can be obtained with a constant setting.

Clock-type thermostats, operating by electricity, provide a lower temperature at night and a higher temperature during the day, automatically resetting themselves. Thermostats are not delicate instruments and do not get out of order easily. They are based on the physical law of expansion and contraction of metals and usually function smoothly or not at all. They seldom need be repaired.

VII. Small Helps in Fuel Saving

Be careful of the way in which the fire is banked at night. More fuel may be wasted by the effort it takes in the morning to warm up floors, walls and furniture that have cooled overnight than it takes to keep a moderate fire going all night.

Don't open windows too wide at night. Fresh air while sleeping is important, but too low a temperature is no longer thought desirable for health. A well-ventilated room at 50 or 60 degrees F. is cold enough.

Be careful about the design of your radiator covers; if radiators are too well hidden, they will not give good service. There must be sufficient openings to allow air circulation. Indeed, any radiator enclosure cuts down efficiency of the radiator, since it reduces the surface directly exposed to the air.

But don't confuse radiators in enclosures with convector units. Any standard radiator may be concealed in a cabinet permitting the greater percentage of heat to be conveyed to the room by convection (air wiping over its surfaces), which means the cabinet must provide enough open spaces for air to move in. But better results usually are obtained with specially designed units called convectors, which permit a free circulation of a *larger* volume of air at moderate temperatures.

Convectors are always enclosed, and the heating element, with a large percentage of fin surface, usually is shallow in depth and placed low in the enclosure—to create a sort of chimney effect therein. The air enters the enclosure near the floor line just below the heating element, is heated moderately in passing through the core, and is delivered to the room through an opening near the top of the enclosure. Since air can enter only at the floor line where the cooler air of the room lies, it is constantly withdrawn and replaced by warmer air.

The way you paint your radiators counts. Not the color; oil paint in any shade will give about the same results. But a finish coat of metallic paint which fashion has wrong-headedly decreed for radiators changes the character of the surface and tends to *reduce* the amount of heat emitted by radiation. Use flat paint. No paint has a noticeable effect on the heat given off by convection.

Put door seals on bedroom doors so cold air from open windows at night will not penetrate the halls and other rooms. Shut off radiators or close warm-air grilles when heat is not desired.

Improvements and Additions

Except in the case of a modern year-round air-conditioning system, something usually can be added to a heating system to give more com-

fort and convenience. It may be the addition of blowers or fans which force the warm air through ducts; it may be an auxiliary filter, circulator and humidifier for an indirect or radiator heating system. It may be a circulator for a hot-water system. Even the functions of air-conditioning can be purchased bit by bit, as additions to heating. But an individual plan must be worked out in advance if the result is to be completely successful. So it is well to consider from the start what you may want to add later.

I. Circulation: With a warm-air gravity heating system, installation of a motor-driven blower will give positive circulation throughout the house and better regulation of heat. It can be used in summer to increase the circulation of night or cool basement air, providing ducts are generously sized.

With a radiator system, a separate unit in the basement fulfills the same purpose both winter and summer.

II. Air Purification: Central air filters which strain out dust, pollen and other particles before air is delivered to the rooms of a house may be placed in almost any warm-air system. With gravity warm-air systems they are not usually advised, because they interfere with circulation. With a radiator system, a separate unit is required.

Room filters, consisting of combined filters and fans, operated by electric motors, are available. They fit in windows and filter the air as it is drawn into the room. The effectiveness of a room filter is affected by the opening of the door to other rooms, admitting unfiltered air. Filters usually are part of units which draw in and circulate air at the same time. These window units, excellent for apartments, have also the advantage of cutting down noise from the street.

III. Humidification: The introduction of moisture into warmed air inside houses in the winter is a comparatively new addition to a heating system. The value of artificial humidification has been debated frequently. There are experts who believe that health is benefited by humidification: the mucous membranes of nose and throat kept from drying out, and complexions improved, while books, furniture and wood paneling are kept in a better state of preservation. Others take the view of C. P. Yagou, of the Harvard School of Public Health, who says: "No one disputes the injurious effect of low humidities to household furniture, but the argument about health has little foundation in proved fact."

Some things to remember, in adding humidification to your heating system are:

1. A humidifying device, to be effective in the average-size house, must be capable of evaporating at least 20 gallons of water a day.

2. One source of humidity, if effective, is sufficient for all the rooms of a house, since humidity cannot be confined to any one part of a house but travels, as and with the air.

3. The amount of moisture added to the air must be controlled, so that condensation on window panes or within the walls will be prevented in the event outside temperatures drop suddenly.

This question of how much moisture to add cannot be categorically stated, since it varies with the temperatures of inside and outdoor air. In general, it is better to keep well below the possibility of condensation. The following table, based on data given in Chapter 3, Heating, Ventilating, Air Conditioning Guide, 1941, may be helpful. Note how much more humidity is possible without condensation, when double glazing or storm sash is used.

Maximum Allowable Relative Humidity in Room, Above Which Frost or Condensation Appears on Window Panes

BASED ON ROOM TEMPERATURE OF 70° F.

Outside Temp. Deg. F.	PER CENT RELATIVE HUMIDITY	
	Single Glass	Double Glass
− 30	6	37
− 20	8	42
− 10	11	46
0	15	50
10	21	55
20	28	61
30	36	68
40	48	75

Various kinds of humidifying equipment are available:

1. *For gravity warm-air heating systems:*

(*a*) A pan which must be manually filled sometimes is built into the furnace as an integral part of the heater. It holds enough water to last several days under ordinary conditions.

(*b*) An evaporating pan may be located at the top of the furnace, which automatically maintains a certain water level. This should be connected with a controlling device known as a humidistat, which stops

and starts the evaporation as conditions demand. Without the humidistat, the water would keep on evaporating *ad infinitum*.

2. *For forced air systems:* Same as (*b*), page 437.

3. *For radiator systems, whether steam, vapor or hot water:*

(*a*) A humidifying pan located on a radiator or its enclosure and filled with water manually is the simplest system, but it is not very successful inasmuch as no one pan can evaporate as much as 20 gallons a day. Filling many pans throughout the house daily is a chore most householders shirk. The higher the temperature of the heating system, *i.e.*, steam, vapor or hot water, the more evaporation there is, of course, from the pan. Gravity hot-water radiator systems have the lowest temperature, but forced hot-water radiator systems provide water as high as 200 to 220 degrees F., which compares with steam at 215 degrees F.

(*b*) Humidifying pans automatically fed from the water line, and regulated by a humidistat which automatically turns off water supply to the pans, are efficient but costly and therefore rare.

(*c*) Separate humidifying equipment providing moisture-laden air from one source may be added. These are the most used humidifiers for radiator systems. They are of three kinds:

Basement units, consisting of spray and fan, with one or more return ducts and outlets, preheat the air, pass it over a spray, and the moisture is carried with the air through the ducts to the outlets. The warmer the air, the more capacity it has for carrying moisture. One central register in a much-used room usually is enough to insure a supply of humidity. These can be used for night air cooling in summer, like a warm-air system.

Room units, consisting of spray and fan built into a cabinet which is set in the room itself, take water at room temperature and mechanically split it up into fine particles. That fine spray is mixed with the room air.

Humidifying radiators, consisting of a steam, vapor or hot-water heated cast-iron pipe, equipped with several pans, break the water up by evaporating it from glass fibers revolved in a cylinder, and discharge the moisture into the air. These radiators are installed in one room only, frequently in hallways.

4. *For any kind of heating system:*

Portable humidifiers are available. These are of the small desk type, or built into cabinets. They generally heat water, causing it to evaporate. The water must be placed in the pans by hand.

IV. Cooling and Dehumidification: These two functions of air-conditioning are introduced into homes together. When you have artificial cooling you naturally have dehumidification, for in the process of lowering air temperature a certain amount of moisture is extracted from it. A chemical process of dehumidification alone, which actually does not decrease air temperature, is possible but it should be supplemented with water or refrigeration to provide true comfort.

Three mediums are employed for cooling: well water, ice and mechanical refrigeration.

(*a*) *Well water* must be below a certain temperature to be used in this way, but if a deep well with water of a maximum temperature of 55 degrees F. is available, it is the cheapest method.

(*b*) *Ice* is used in those regions where its price is low and its delivery convenient. Large tanks built so cakes of ice can be put in on trays are equipped with sprays. The water flows over the ice and then is pumped through cooling coils, after which the water is recirculated.

(*c*) *Mechanical refrigeration* employs chemical refrigerants inside coils which extract heat from the air. It is the most commonly used in commercial installations, where it has proved itself, and the majority of cooling systems planned for homes therefore are of this kind. It may be installed as a central unit or as room units. The room units employing mechanical refrigeration usually circulate air and filter it at the same time. Some room units may be used in winter to heat, humidify, circulate and filter.

Chemical dehydration involves use of a chemical air-drying agent such as silicagel, activated alumina calcium chloride, or lithium chloride, which remove moisture from the air. After extracting the moisture, auxiliary equipment is necessary to cool the air to temperature desired. Well-water cooling should be used, if available, or else mechanical refrigeration.

Cooling is the last function to be added to the home air-conditioning system, except in warm climates where the cooling season is of longer duration than the heating season, if any. The reason for waiting until everything else has been added before buying real cooling or refrigeration equipment is that a certain amount of relief from summer heat is possible without actual air cooling, *i.e.*, circulation of air through ducts

of a warm-air heating system, the use of attic fans, electric fans, insulation, shades, awnings, or even the time-honored practice of closing windows and doors in the daytime and opening them wide at night.

One caution, if an air-cooling device is used: don't set it for too low a temperature in relation to outside temperature. Going back and forth from a cooled room to a warm room, or from a cool house to midsummer outdoor heat, subjects one to catching cold. Cooled rooms should be about 10 to 12 degrees cooler than outdoors, unless the outdoor temperature is 95 degrees or over. An indoor temperature in excess of 82 degrees will rarely be found comfortable for periods of long duration.

V. Comfort Devices: A host of appliances, devices and apparatus are available for making the air within a house more comfortable.

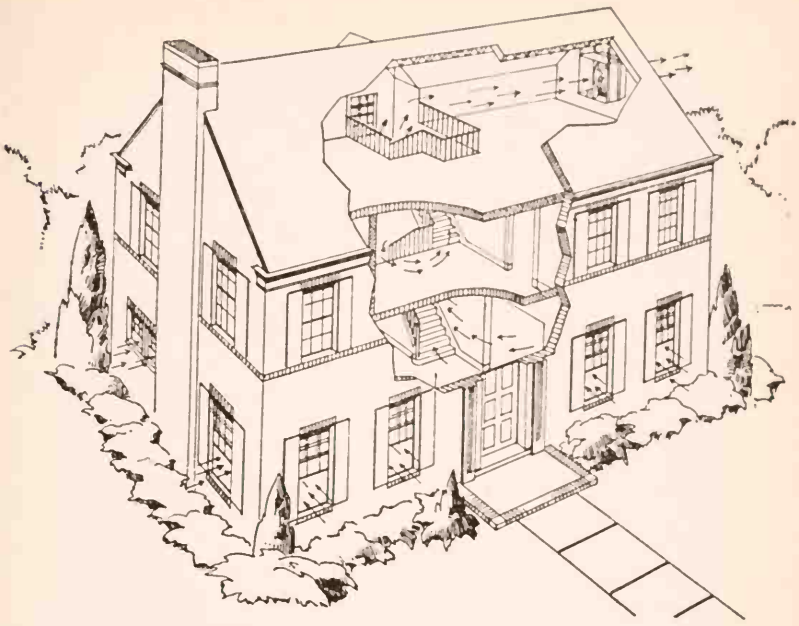
(*a*) Attic fans, while not strictly air-cooling devices, bring relief by increasing air movement and using cool night air with which to "flush" a house of warm day air. They have been widely used in the West and South where humidity is low. A fan installed in an attic window or in an opening in the wall at the top of the house is set in motion during the night to draw off the warm air of the day, which rises to the top of the house. As it is drawn off, cool air at the bottom of the house comes in to take its place, through open windows and doors. Attic fans are most effective in climates where a drop of 10 degrees is customary at night.

(*b*) Kitchen ventilating fans, set in the kitchen windows, carry off kitchen odors and relieve the heat in the one room of the house which is likely to be most uncomfortable in summer weather. Many models are on the market, and are relatively inexpensive.

How to Tell When Something Goes Wrong

From time to time certain defects may appear in heating systems which should be corrected. The main concern of the householder is recognizing that something has gone wrong. He cannot, in most cases, correct the difficulty himself. A sick heating system, like a sick person, requires a "doctor" to diagnose the ill and suggest a cure. But hobbling along with a limping heating plant over a period of time is bad policy, for defects—like cavities in teeth—merely grow larger as they are neglected.

Defects need not be so glaring that they cut off the supply of heat a house is getting. They may be merely minor flaws, causing slight inconveniences. Pride in a home and the desire to avoid future serious troubles indicate prompt atttention to them.



This diagram shows how an attic fan draws warm air up, through and out of a house during the day. At night, cool air is carried through the house in the same way.

We list here a few of the more common troubles that may crop up:

I. One Room Will Not Heat Sufficiently

Check the windows—they may be leaky, may be dissipating the heat in that room.

(*a*) *With warm-air heat* a cold room may mean that ducts are too small, grilles not properly sized, or the system not properly balanced. See if the duct damper at the furnace end of the duct to the cold room is open, allowing heat to enter. Try closing the damper to a warm room, at least partially, so that more heat can pass to the cold room which is further from the central heating unit. If these things don't help, call in a furnace heating contractor. He may have to change the ducts or grilles, or—if the system is a gravity type—he may put in a fan to push heated air through the house more rapidly.

(*b*) *With radiator heat,* it may mean insufficient radiator surfaces, in which case larger radiators may be installed, if pipe capacity is adequate. It may mean the thermostat is placed in a room which is heating rapidly, and shuts off the heat before the radiator in the cold room has had time to heat up.

(*c*) *With steam or vapor systems,* the radiator in the cold room may have become "trapped" through a sinking of the building; water may have collected in a low spot in the pipe. The remedy here may be raising the radiator, or it may be installing air valves with adjustable parts or openings on radiators throughout the house to cut down the speed with which warm rooms heat and increase the speed with which the cold room heats. It may be due to faulty piping, too.

(*d*) *With hot-water radiator systems,* if one radiator does not heat properly, it usually means air has been trapped in that radiator and the air valve has to be opened so it can escape. This can often be done by the householder himself, if he is careful not to open the valve for too long a time or to let any appreciable amount of water spurt out. The air valve is a small valve at the top of the radiator itself, not on the pipe. Most air valves on hot-water radiator systems are operated with keys; to open them you must have a key which fits the valves. If you have lost yours, you probably can procure another from your heating contractor. Just turn the valve until you hear air escaping. Let it escape until a drop or two of water comes, then shut it quickly. If the radiator still does not heat properly, call the heating expert, as circulation may be sluggish or the system may not be balanced properly.

II. One Room Overheats

This may be because the thermostat is improperly placed. Never try to change a thermostat yourself. It is one of the most important parts of your heating system; must be installed perfectly.

(*a*) *With warm-air heat,* the damper to the too hot room should be partially closed, so the heat can go elsewhere. You must know which damper serves that particular room, of course. It is a good idea to have all dampers, usually located in the basement, tagged with the names of the rooms they serve.

(*b*) *With radiator systems,* adjustment of valves may be necessary. Steam radiators may be supplied with air valves having adjustable ports, to cut down on the amount of heat coming to the too warm room. With hot-water heat, an orifice may have to be placed in the

supply valve or return elbow to cut the flow of hot water to the particular radiator which overheats. Both these things must be done by a heating contractor. Vapor systems always have modulating valves, allowing the supply of vapor to each radiator to be regulated at the time of installation. If one radiator proves to be too warm, call the man who installed the system to have him decrease the flow to that radiator.

III. Whole House Is Too Cold in Mid-winter

This probably is due to a furnace or boiler of too small size; it may also be because of insufficient radiator or duct or grille sizes. But undersized furnaces and boilers account for the majority of too cold houses or excessive fuel costs. Insulation, weatherstripping, storm windows might help, if you want to avoid installing a larger boiler or furnace. The proper solution for a particular house depends upon the diagnosis made after a heating contractor has examined the house.

IV. There Is Noise in the Steam Pipes

This is always a case for the "doctor." He must check the grading or slope of pipes in the basement, to see that there are no spots where water collects. If water collects, it is pushed along by the steam to the end of the pipe where it hits with a bang that creates the knocking or noise. The heating contractor also will check pipe sizes, to find out if they are large enough to handle the amount of steam required. Too small pipes create too high velocity, which makes the steam itself hit the end of the piping with a bang. The third point of check-up is the "drips" at the end of the main point or risers. (For noise in plumbing pipes, see page 467.

With vapor systems, which are a form of steam heat, the only noise possible is a rattle in the trap—a sort of chatter—meaning that the trap is not closed tightly. Perhaps there is dirt in the seat of the valve, which keeps it from closing properly. This means a simple adjustment, but one that must be done by an expert.

V. Other Noises from the Heating Plant Develop

With warm-air systems, there may be noise in the ducts or the sound of combustion in the burner may be carried to the rooms of the house. Lining the ducts with fireproof acoustical material for a certain distance from the furnace or boiler may solve the problem. It is always a problem for an expert.

VI. Radiators Leak

This is a common trouble and usually taken lightly. Yet leaking radiators should not be ignored. A small leak may grow worse and cause damage to furnishings. It may cost only a few cents to repair a radiator leak, but a great many dollars to repair a ceiling ruined by a leaky radiator on the second floor.

The cause of the leak may be a crack in the radiator, possibly from freezing when a house was closed during winter months; it may be a loose joint somewhere; it may be loose packings in the valve heads. The expert alone can locate it.

VII. The Heating System Is Slow in Starting

If it takes very long to bring room temperatures up, this probably indicates an inadequately sized plant and/or inadequately sized ducts or pipes. Something is too small if the system won't pick up its load. Any properly sized heating system should bring room temperatures up quickly at the beginning of the season, and bring them up from nighttime "low" to daytime level when outdoor temperatures are average, at a rate of about 10 degrees per hour. It will take longer to reach 65 or 70 degrees if the weather is very cold and rooms have cooled off during the night; but a 50-degree room normally takes about two hours to reach 70.

VIII. The Fire Is Sluggish

If a hand-fired coal furnace or boiler smokes when you try to kindle the fire, it might mean a bad chimney draft due to imperfections in the chimney. This is a serious defect to remedy. A mason must be called to repair cracks in the flue lining, or perhaps coat the inside of the flue with mortar, if there was no proper flue lining to begin with. It may be the chimney is not high enough and the roof of your house blocks the draft; sometimes a chimney pot on top will mitigate this trouble. Repairs to chimneys are always difficult, usually costly. The chimney may be partially clogged with soot, requiring cleaning, especially at its base. It is advisable to clean a chimney once a year if bituminous coal is used; once every three or four years with anthracite or coke. (See page 450).

IX. There Is Ash Dust or Soot in the Air

The answer here is: "Start housekeeping in the basement." Don't let ashes accumulate; wet them down before removing them from the ashpit. Ashpit sprays are available, which make it as easy to wet down

the ashes as to turn on a shower. Have your flues and fire-pots cleaned. See there is no leak in the flue or smoke-stack.

With warm-air heat, it may mean recementing the seams around the furnace and cleaning out the ducts. *With radiator heat,* the only way ash dust or soot can travel through the house is through the cellar stairway or the floors: there must be a great deal in the basement if this happens. See that cellar door remains closed and floors are tight.

X. Too Much Fuel Is Being Consumed

See "Ways to Save Fuel," pages 432–435.

Hot Water for the Home

A generous supply of hot water for washing and bathing may be considered as part of the house-heating problem or as a separate heating problem. Whether water can be heated in the winter time by utilizing the house-heating fire for the purpose depends upon the equipment installed.

In general, it is not recommended practice to heat domestic hot water by means of warm-air furnaces regardless of the fuel burned, although it sometimes is done anyway. The only method for doing so is to place coils or "fingers" above the firebed, which system has two defects:

(*a*) On cold days when the furnace is going full blast, the water may become too hot for use without danger of scalding, or the heat may become intense enough to cause steam in the hot-water storage tank, which is a real hazard.

(*b*) On warm days when the furnace is burning low, insufficient hot water may be provided for regular household tasks.

With radiator systems, employing boilers, domestic hot water can be provided in the winter time with any fuel—oil, gas, coal or coke—hand-fired and stoker-fired. It should be noted that although there may be savings in heating water with the house-heating equipment in winter, it may cost the same or more for fuel with which to heat water in summer with the house-heating units than with a separate water heater.

Water Heaters as Part of House-Heating Unit

There are two general types:

I. The Storage System consists of a coil within or attached to the boiler. The water within the coil is heated because it is surrounded

by steam or hot water, and is then piped to a storage tank where it remains hot until used. May be used with coal, coke, gas, oil. The satisfactory use of the system depends largely on its size and recovery capacity.

In choosing a storage type hot-water heater, its size is determined by a knowledge of the recovery speed of the coil and boiler used. If there is a quick recovery, obviously a smaller tank will be required because it will take a shorter time to heat another tankful of water.

II. The Instantaneous System has a large coil in the boiler that heats the water as it is drawn from the faucets. This gives a practically inexhaustible supply. It may be used with gas, oil or electricity.

For all-year-round hot water from house-heating equipment you can use coal, coke, oil or gas. The gas people do not recommend this, however, since less gas would be used in the summer by employing a separate hot-water heater. Hot-water radiator systems, if operated during the summer months to supply hot water, are equipped with a cut-off device to prevent circulation of hot water through the radiators. Steam and vapor systems do not need this device because temperature is kept below steaming point. (See Controls, page 447.)

Separate Water Heaters

These have the advantage that the supply of hot water is dependent upon need for water alone, nothing else. Regardless of the weather, the heat supplied is based on hot-water needs of the household.

In general, figure 10 gallons of hot water a day per person in a small house, 15 gallons in a medium-size house, 25 gallons in a large house. Fifty gallons of hot water a day is the average family's need; but this does not mean a 50-gallon tank is necessary. In fact, 20, 30 and 40 gallon tanks are the most generally used, because of the rapidity with which a tankful can heat up again and again.

Every storage water heater should be well insulated, to minimize heat loss after the water has been heated and delivered to the tank.

1. Independent *coal* water heaters are pretty much of one type: storage heaters with the familiar pot stove into which a few shovels of coal are placed each day. They come equipped with automatic controls that close dampers without manual attention. However, there are stoker-fed hot-water heaters, comparatively new on the market, which employ small-sized stokers to fire the water heater, eliminating almost all manual attention.

2. Independent *oil* water heaters either have burners under the tank

or conversion burners hooked on to existing tanks. They are automatic. Some of them burn kerosene, which should never be handled in the open. But new separate oil heaters pipe the kerosene from tank to storage heaters. Separate oil heaters for domestic hot water are not as popular as the water heaters which are part of oil-fueled house heating plants simply because it is so easy, when using oil-burning equipment for house heating anyway, to include water heating with it.

3. Independent *gas* water heaters may be of four different kinds: automatic storage water heaters with gas burners under the tanks; conversion heaters in which gas burners are added to an existing tank that is in good condition; instantaneous heaters in which the water is heated as it is drawn; side-arm water heaters controlled by hand (they must be lit when hot water is needed, turned off when no longer required) or in some cases automatically controlled.

Gas instantaneous heaters are of two types:

(*a*) Larger ones in the cellar which supply the whole house; they cost more to buy than gas-fired storage heaters, are more expensive to run.

(*b*) Sink or wall heaters which supply hot water for one faucet only.

4. *Electric* water heaters, always independent of the house heating system, are made as regulation storage tank, as conversion heaters, or as instantaneous heaters. They are entirely automatic. Their use depends on the cost of electric current in a given community. Electric instantaneous heaters are of the wall heater type, designed for use with one faucet only.

Water Heater Controls

Regulators for all types of water heaters, regardless of the fuel used, should be of two kinds:

(*a*) Relief valves placed on the water-heater tank to prevent excessive pressure.

(*b*) Thermostats and mixing valves to prevent excessive temperature and to insure the mixture of cold water with hot at the faucet. (Mixing valves are used chiefly with systems working from the heating plant.)

Special Water Heaters

Variations on methods of heating water are many. Among them are

special gas-fueled heaters consisting of incinerators and water heaters, which allow debris to be destroyed and water heated by the same process; water-backs on coal-fired kitchen ranges which are piped to plumbing fixtures in the house.

Special Devices for Water Heaters

Circulators to be attached to storage-type heaters, to keep hot water in motion and avoid its possible cooling off in the tank or pipes during non-use periods, will augment and add to gravity circulation in many instances, making hot water instantly available at all times of the day and night.

Care and Cleaning of Hot-Water Heaters

It is advisable to clean the surface of the heater that comes in contact with the fire with a wire brush about twice a season, removing all of the material that gathers there as a result of the burning fuel coming in contact with the heating surface of the boiler. Also, it is advisable to remove the soot from the interior of the flue pipe extending from the heater to the chimney at least once each year.

It would be wise to draw the water off from the heater at least once each year. When drawing water off be sure that the fire is out. A good method is to let water run through the heater while drawing the water off. This washing out of the heater will carry off sediment that has gathered in the heater. This sediment prevents proper circulation of the water.

The removal of sediment and cleaning of the heating surfaces, and maintaining proper draft by having a clean flue and chimney will assist materially in fuel economy.

Space Heating

Although central heating is the modern method of heating homes, there are special uses for heaters which handle limited spaces such as enclosed porches, conservatories, little-used bedrooms, bathrooms or summer cottages.

I. Fireplaces are actually space heaters since they are primarily additional sources of heat for one room and not intended to supply heat for a whole house. They are useful for early spring and late fall in houses otherwise limited to summer use; they may be harnessed to give some heat to other rooms by the addition of a heating chamber surrounding the back and sides of the fireplace, with ducts to carry warm air to registers not too far distant from the fireplace.

For greatest heating efficiency, a fireplace should have a hearth built well out into the room, and an opening topped with a metal hood to radiate heat. If a heating chamber unit is installed, a fan even may be added, to force the circulation of the heated air which otherwise would be wasted up the chimney.

They also provide a positive source of ventilation. They must be dampered tightly in winter or they may cool a room quickly. Warm air will rush up an undampered chimney.

II. Coal or Wood Stoves are of two types: closed and open. Both may be used for wood or coke; the closed type is meant for hard coal, the open for either hard or soft coal. Generally speaking, soft coal requires more air space than hard. Hard coal takes a relatively large grate with small air openings; soft coal can burn on smaller grates with larger air openings.

The open-type stove is patterned after the fireplace. Its most illustrious example is the Franklin stove, reproductions of which are widely available and much improved in heat-giving capacity.

All wood and coal stoves require chimneys. Flues should be not less than seven inches in diameter.

III. Gas Heaters are of three major designs: One is the circulator which looks like a radio cabinet (though metal), the flame is enclosed, and air is drawn in at the bottom and out the top. The second is the radiant heater, which has the flame playing on fire-clay radiant elements that make a glowing front. These sometimes are installed below floors, with grilles over them, and are very popular in the South and West. The third is the gas-steam radiator which looks like an ordinary radiator and has in it a small amount of water that is raised to the boiling point by a gas burner and circulated within the heater. It has a relatively large radiating surface, but requires attention to guard against the boiling away of the water.

It is advisable to vent gas heaters into a chimney, like wood or coal stoves, to carry off flue gases.

IV. Oil Stoves come in many sizes and types. Small portable types are inexpensive, but frequently give off an odor and vitiate the air. Modern oil burning space heaters are vented into chimneys. They may be automatically fed from an oil storage tank which sends oil to the burner by means of an electric pump, or by gravity. The enclosed circulating type of heater draws cold air from the floor and dispels warm air through a grille at the top. Certain types may be installed flush with the floor so that nothing is visible except the top grille.

Some oil space heaters now are being used with motor-driven blowers to give flow to the heated air. The fan may be used without fuel in the summer for a certain amount of cooling by circulation. They also have humidifiers built into them.

V. Electric Heaters are clean, efficient and dependable, but frequently too expensive for anything but limited use. The most common type is the reflector, which throws a radiant beam of heat from its modified half-sphere reflector. Electric steam radiators, operating much like gas steam radiators, are popular because of their portable nature. They may be plugged into any convenient outlet and give off as much heat as any other steam radiator of the same size. Some have automatic controls which turn the current off when the temperature has reached a desired level.

The first cost of an electric heater is moderate, but before procuring one, electric power rates should be checked.

Care of Chimneys

Cleaning: The disappearance from the current scene of the much sentimentalized chimney sweep has raised the question of what to do about cleaning chimneys. If a chimney fills up with soot, it will not provide a good draft and must be scraped. This may be done by filling a burlap bag with excelsior, attaching a rope to either end of the bag, dropping it down the chimney; then, with a man at either end of the rope, pulling the bag up and down so it scrapes along the sides of the chimney, knocking off the black encrustations there. It is, of course, a dirty job. If you would avoid it, ask your heating contractor to clean the chimney when he cleans the heating system in the spring. He can get the soot out with a vacuum cleaner. Many progressive fuel dealers also furnish this service, along with furnace and smoke-pipe cleaning, at modest prices.

Flue Linings: Keep the clay lining of each flue in your chimney in good condition, taking particular care that the joints between flue sections are tight from bottom to top. Many fires of seeming mysterious origin come from leaky flues. Mortar should be replaced promptly, if it falls out, both because of the fire hazard and because a gap in the flue directly affects the draft over the firepot or fireplace. Self-aligning joint-locking flue linings may be purchased, prefabricated, for new work.

CHAPTER XXVII

PLUMBING

The American people are the most plumbing-conscious nation in the world. More bathrooms have been installed in the United States than anywhere else on earth. Yet plumbing remains to most a mystery of pipes and pressures, traps and drains, which only the professional plumber can penetrate.

The mystery arises from the fact that more than half of the plumbing system in a finished house is invisible. Fixtures and fittings, seen every day, are easy to understand and care for, but the unexposed parts of the system are unfamiliar mechanisms, dangerous to tamper with when something goes wrong. Except for a few minor repairs, invisible plumbing parts should be left to the ministrations of master plumbers, but a little knowledge of how a plumbing system works is a good thing for every householder. It helps him diagnose ills, know when to call the plumber.

There are three primary things the prospective buyer or tenant of a house should consider in connection with the plumbing.

1. Health Requirements: Installation of a plumbing system must follow local Board of Health regulations. Many communities have stringent regulations, automatically controlling all danger spots. All communities have health departments willing to advise and cooperate in maintaining maximum safety.

(*a*) Find out what local health ordinances require, so that requisite inspections of new work may be made by municipal authorities.

(*b*) Have a plumber check an existing system to make sure that it meets or exceeds minimum requirements, such as

1. Fresh water lines must not be cross-connected through plumbing fixtures to the drainage system;

2. There must be a sufficient number of water seals or traps to prevent the entrance of unsanitary sewer gases or pests;

3. Prescribed kind of drainpipe carrying waste material to sewers or septic tank must be used.

(*c*) Check the purity of the fresh-water source, if it is not municipally owned and inspected by the local Board of Health.

1. Write to the State Water Commissioner, asking for directions as to submitting a sample for examination.

2. Send the sample, in a sterile container usually provided by the authorities, to the laboratory of the State Board of Health.

3. Follow suggestions made by the laboratory for correction of dangers found by the analysis, even if it involves a new water source. (See page 490.)

II. Character of the Water: Any one who has moved from one part of the country to another knows how widely water supplies vary. Some water is hard, some soft; many waters are corrosive, which makes them destructive to plumbing systems. It is particularly important to know what kind of water is available if new plumbing pipes are to be installed. The installation of the right material for the particular water supply with which it is used can make the difference between long and comfortable service and early deterioration of the pipes.

(*a*) Have a second analysis of the water for hardness and corrosive content. Some municipal and state agencies will do this kind of analysis, if it is requested. In other instances, it may be necessary to send samples to a private agency.

(*b*) *Check the experiences of neighbors using the same or similar water with various types of pipes.* Also ask your neighborhood plumber or representative of large pipe manufacturers for their recommendations. Most large pipe companies now are cognizant of the importance of the water factor and do not recommend their piping when it will not be most effective.

III. Reliability of the Plumber: No choice of material, however wise, will prevent trouble unless the workmanship which goes into the installation of a plumbing system is good. It pays to have the best plumber you can find in the neighborhood, both to install and to repair equipment.

(*a*) Shop for a plumber as for a doctor or an architect; ask your friends whom they recommend, find other people for whom a specific man has worked, and get opinions as to his skill and trustworthiness.

(*b*) Don't choose a plumber on the basis of "bargain prices." The most expensive man is not always the best, but the cheapest is apt to be least responsible.

Plumbing Pipes

The invisible parts of the plumbing system are composed of the following parts:

1. Service pipes, which take fresh water, either cold or heated, to all faucets and fixtures.

2. Drain pipes which carry off all wastes and soil.

The comfort of all cleaning, washing and bathing preparations in a home depends solidly upon the material pipes are made of, their size, their proper installation and protection, plus easy access to the drainage and stop valves which control their use.

I. Material of Pipes: Two general types of piping are used: *ferrous* (iron and steel) and *non-ferrous* (copper and brass). In order to choose the material intelligently something must be known of the character of the water used in them. The serious problem of corrosion-prevention involves consideration of two major factors: the kind of water and the kind of pipes.

(*a*) *Corrosion*

No metal is immune to corrosion, but the rate of corrosion depends principally on the characteristics of the water involved. Hard water which has a high amount of mineral deposit tends to build up an inner coating of scale which, in due time, can clog the pipes. The cure for this is water-softening (see page 458). Soft water, which is free of large amounts of minerals, is more apt to be corrosive or aggressive, as the chemists say, than hard water. It eats into the pipe itself if a resistant metal has not been chosen. The cure for this most generally is choice of the most resistant metal for the particular water used.

Corrosion is caused by dissolved atmospheric gases in the water. All public water supplies contain atmospheric gases, picked up as the water flows through air, either as rain, or in a spring, stream or reservoir. These gases are in solution, as are the mineral salts—they cannot be removed by filtration any more than dissolved sugar can be removed from your morning coffee.

The few parts of dissolved atmospheric gases per million parts of water (by weight) are the cause of widespread corrosive destruction of piping. These gases are primarily oxygen and carbon dioxide. Many municipalities remove some of the carbon dioxide, which is the accelerating agent, to remedy or improve the condition. If this is not done by your municipality, water treatment is possible for the individual home through units called neutralizers (see page 459) or through the special-

ized services of water engineers. Special services usually can be justified only in more expensive homes. It is better economic practice, for the most part, to install the right pipe from the beginning, or to change the pipe if the condition becomes intolerable.

Corrosion also may take place in a plumbing system when there are two different metals used. An electrolytic action sometimes is set up which accelerates the destruction of the less resistant of the metals. If this goes on long enough, leaks can develop. To guard against this, choose pipes, joints and fittings all of the same metal, particularly in soft-water districts. Don't solder a brass or copper pipe with lead, lest it lose its strength by electrolytic action and leak at that point.

(*b*) *Kinds of piping*

There is no best piping for all conditions everywhere. As a rule, however, non-ferrous piping is more resistant to corrosion than ferrous. Yet there are some waters which are more destructive to non-ferrous piping than ferrous. Special analysis and specific recommendations must be made for every installation of house water lines.

1. *Ferrous piping* may be *galvanized wrought-iron, cast-iron* with a corrosion-resisting lining, or *galvanized steel.* Wrought-iron piping is an excellent choice for drainage pipes, being more resistant to the corrosive gases which sometimes develop from waste. Galvanized steel and wrought iron are the most commonly used of the ferrous pipings.

2. *Non-ferrous* pipings are either copper or brass. It is well to avoid lead, since the danger of lead poisoning, while slight, is serious enough when it occurs to warrant precautions. *Copper* piping comes either rigid or in soft, snakelike tubes. The soft type is particularly good for renovation work, as the coils can be inserted in the walls and pushed into place, instead of having to be jointed at all turns like hard piping. *Brass* piping is excellent if balanced against the corrosive content of water. Certain types of corrosive waters give adequate service only in *red brass* pipes, containing about 86 per cent copper, and should not be used with *yellow brass,* containing between 60 and 70 per cent copper. In many parts of New England and New York, where there is soft, corrosive water, yellow brass is not a good choice at all. Find out about corrosive content before choosing.

II. Size of Pipes: Both supply and drain pipes must be large enough to provide for inlet and outlet which is neither too swift nor too sluggish. Pipe sizes indicate nominal inside diameters. In the average home there usually should be a 1-inch main service supply pipe; at least one bathroom supply pipe of ½-inch; pipes to kitchen sinks, wash

trays, bathtubs, shower, lavatory and water-closet flush tank from ½ to ¾ inch. By increasing the size of pipe to bathroom and bathtub the noise of flowing water in pipes can be eliminated, as this noise usually means pipes are too small. Drain pipes range from 2 to 4 inches in diameter. (See chart below.)

The character of the water dictates to some extent the size of the pipes, in that it is only sensible to use pipes with slightly larger diameters in hard-water sections, where a scale on the inside is probable after some use.

Supply pipes come in three thicknesses—standard, extra strong and double extra strong. Follow your plumber's recommendations as to where to use the stronger pipes.

To tell if piping is adequately sized for the disposal of waste, time the various fixtures to see how long they take to empty. The best authorities in the country have approximated the times as follows:

Fixture	*Time required to empty*	*Required drain pipe size*
Wash basin	12 seconds	1½ inch
Sink	30 seconds	2 inch
Bathtub	1½ to 2 minutes 1 to 1⅓ minutes (depending on which of two standard-sized tubs are used)	1½ inch
Laundry tray	20 seconds	2 inch
Water closet	6 to 10 seconds	4 inch
Separate shower	none	2 inch

III. Installation of Pipes: The location of pipe runs, their length, the quality of their joints and fittings are all important to good plumbing. They are, however, intricate technical matters which must be left to the judgment of an experienced plumber. Have your plumber check the following points in regard to installation, and abide by his decisions:

(*a*) *Slope of the pipes*: There must be sufficient slope of all pipes to eliminate air pockets or sags in the run. Soil and drain pipes should slope at least 1 inch in 4 to 5 feet; supply pipes about 1 inch in 8 or 10 feet. Slope is particularly important in the supply line leading from a heat source to the hot-water storage boiler, to eliminate pounding while the water is heating. On horizontal runs of waste pipes, accessible cleanout plugs should be provided, to permit removal of stoppage.

(*b*) *Length of pipe runs:* Too long a run near a level line, especially in waste pipes, will tend to make waste collect and clog the pipe.

(*c*) *Number of traps:* Traps are installed in all connections to prevent sewer gas entering the house. There should be a trap where the drain enters the building. Each roof drain, floor and yard drain should have a trap. And of course each fixture should have a trap connected with a ventilating air pipe, which may be joined above the top of the fixture into a common pipe extending above the roof to open air. This vent pipe maintains a balance of air pressure within the drain pipes and thus prevents loss of the water seal in the traps from siphonage or back pressure when fixtures are discharged. The water seal is what keeps sewer gas out of the rooms. The ventilating of the drain pipes helps to reduce clogging of the drains and increases the life of the system.

(*d*) *Water pressure regulation:* A storage tank able to withstand 250 to 300 pounds of pressure will prove durable. An electric pump and pressure tank system with automatic pressure control is necessary with private well systems.

Faucets and water inlets to fixtures should be 1½ inches above the fixture rims. In water-closet tanks the flush handle should be high enough above an open overflow to prevent back siphonage of foul water in case of stoppage or shut-down of water supply.

Every hot-water generating system should have an automatic pressure relief valve kept in good working order and tested at least every six months.

Test of thorough action: in the first two or three seconds of flushing there is a strong siphon action, a sort of swallowing, followed by a period when the bowl is practically empty, and then another siphoning action completing the disposal.

(*e*) *Location of drainage valves:* Valves for emptying a system when necessary should be installed at the lowest points of the system. Clean-out plugs should be installed wherever pipes change their direction, to make it easier to clean the pipes in case of stoppage.

IV. Protection of Pipes: Adequate protection against freezing and condensation of moisture on pipes must be provided.

1. Don't run water pipes on outside partitions in cold climates, if this possibly can be avoided.
2. Wherever temperatures are low, wrap the pipes in thick jackets of insulating material such as asbestos pipe covering, or insulate the walls through which the pipes run to prevent infiltration of cold.

3. Where cold-water pipes run through warm areas, cover them with felt, to prevent pipe sweating, which is disfiguring and can cause paint failure.
4. Install a grease trap in the waste line between sink and house drain, to catch accumulated grease from dishwater. The grease trap must be accessible for regular cleaning. Remember, grease is an enemy of pipes!
5. Never leave a house for the winter without turning off the water at the main supply pipe and draining the pipes, to prevent freezing. Burst pipes are a messy and costly business. Be sure to include all pipes, even those to outdoor hose connections, the hot water heater, etc.

How to Drain a System for Winter

Water seals or traps placed under every fixture must be drained. In the case of sinks, wash tubs and lavatories, this is done by removing the plugs at the bottoms of the traps and letting the traps drain into a pan or bucket.

In the case of toilets, after the water supply is closed, flush until all water is out of tank. Use a suction cup to force out most of the water and sponge it from toilet bowl. Then fill the toilet bowl with kerosene, to seal the trap so that sewer gas will not escape into the house.

The concealed trap beneath a bathtub must be filled with kerosene until it is visible below the strainer. Any traps located in the basement also should be filled with kerosene.

V. Easy Access to Drainage and Stop Valves: Know where the valves are which control the various parts of your plumbing system. Shut-off valves for each faucet should be installed, to make repairs to a single part easier, and to prevent more expensive repairs. It is sometimes desirable to have the plumber make a list of valves and post this list on a cellar wall.

Stop valves should be installed below the frost-line or in frost-proof closets in unheated basements. The location of the main shut-off valve, placed where the water supply enters the house, should always be known to at least two members of the family, so it can be reached quickly in case of accident. Its accessibility may save a flooded floor or prevent a fallen plaster ceiling. Keep a special wrench for opening and shutting this valve hanging from a hook near it, to avoid delay.

VI. Care of Plumbing Pipes: Clean scalding water poured down the sink drain about three times a day is sufficient normal safeguard against

clogging of these pipes. Be sure to do it after washing especially greasy dishes. (For treatment of clogged pipes, see page 464).

1. Don't pour grease or greasy water down the kitchen drain. The grease coats the pipes and makes other waste cling, building up possibly obstructing films.
2. Don't use ravelled or fraying dish or wash cloths, as lint helps clog drainpipes, too.
3. Don't put lye down the drain. It may take off the finish of the fixture, but more serious is the result inside the pipe. Lye in contact with grease in a pipe or trap forms a hard soap which can clog the pipe. Also, when the plumber is called to clear the drain, he can get seriously burned from the caustic lye.
4. Don't throw bulky papers or sanitary napkins down the water closet drain. In spite of widespread assurances that it is safe to throw these articles down water closet drains, it may necessitate a plumber's bill if the pipes happen to be slightly under-sized. Cigarette butts, hair, lint, cosmetic materials also should not be thrown down the drain.

Water Softening Systems

Water may be improved in character by various devices available today. (See water sources, treatment and filters, pages 490 and 493.) A water-softening system is a welcome addition to a home plumbing system using water that has considerable mineral content. Note that mineral content has nothing to do with the potability of water. It merely is difficult to use hard water for washing purposes and its scaly deposit cuts down the efficiency of supply pipes.

Zeolite water softening systems usually are well suited for household purposes. They are available in various sizes, some applied to single faucets, others attached to the main water line. The main line softeners naturally deposit less scale in plumbing pipes.

Before installing a water softening system, have an analysis of the water to determine how much hardness there is. Many manufacturers of water softeners have laboratory facilities which do analytical work free of charge for prospective customers. (See chart, page 258.)

The principle by which softening systems work is that of changing the form of dissolved mineral matter in the water. Zeolites are a form of sodium silicate, which are insoluble in water and which have the power to exchange their sodium for an equivalent amount of calcium and magnesium, the principal minerals found in hard water. The

water, flowing through the zeolite, deposits its calcium and magnesium in exchange for sodium silicate, and the so-called hardness thus is cut down or eliminated.

Zeolite softening systems cannot be used successfully with water that has more than the usual amount of sodium salt already in it.

Water softening systems require periodic recharging, either by hand or by means of automatic equipment. Usually the addition of a 10 per cent solution of common salt refreshes the system.

Softening apparatus and piping should be suitably housed to protect them from frost.

Neutralizers

For certain conditions of corrosion in pipes due to corrosive agents in the water, units called neutralizers can be installed. They consist of a bed of crushed marble upon which some of the carbon dioxide in corrosive water reacts to form calcium bicarbonate.

Symptoms of corrosion are red, blue or green stains in tubs and wash basins, but the best way of determining if the water is corrosive is to have an analysis made before purchasing any equipment. Then you will know the treatment and the size unit required.

The neutralizer is installed as close to the source of supply as possible, while remaining accessible. It may be manually or electrically operated. It requires flushing out of the mineral bed once a week, a function which is easily done by three simple turns of the control wheel located at the top of the tank of manually operated neutralizers, and the flipping of a switch in the electrically operated neutralizesr.

Plumbing Fixtures

Three different types of bathroom and kitchen fixtures are available:

1. *Baked enamel:* Cast or formed iron base with powdered enamel fused to it at a temperature of about 1800 degrees F. Has high gloss.
2. *Porcelain enamel:* Clay mixture molded in plaster casts and baked to get semi-gloss finish. Coarse surface.
3. *Vitreous china:* Refined type of porcelain enamel, using a fine china clay.

Baked enamel and vitreous china are the most popular types, although vitreous china frequently is erroneously called porcelain. China costs from 10 to 15 per cent more than baked enamel. Bathtubs, kitchen sinks and large pieces usually are of baked enamel, water closets almost always are vitreous china, and lavatories are equally popular in both finishes.

Bathroom and kitchen fixtures sometimes are sold complete with fittings such as faucets, spouts and stoppers, but more often fixture and fittings are selected separately. In choosing fittings remember:

1. Chromium plated metal does not tarnish and is easily polished.
2. Faucets should be set high enough above basins and sinks to be out of the way of hands busy with soap or dishpans; they will be splashed less there and need cleaning less frequently.
3. Swing-spout type faucets where both hot and cold water is supplied make regulation of the temperature of the water simple, and avoid scalding.
4. An automatic mixing valve may be installed to prevent scalding in the shower.
5. The simplest, most inexpensive, most effective stopper is the rubber plug on a chain. Replace it whenever it becomes softened with wear.
6. Pop-up valve stoppers which move up and down on the floor of your tub or sink are dangerous to feet and hands, tend to get out of alignment and not close tightly.
7. Cylinder drain barrel stoppers, which stand behind the tub or sink with the faucets and have a grilled drain on the floor of the tub or sink itself, do not always fit tightly enough to prevent waste from catching at the sides. If waste stays long enough it can develop an unpleasant odor in the drain.
8. Flat discs of rubber used to cover the drain so dishes can be washed in a sink without a dishpan are variants of the rubber plug and chain stopper. Must be replaced often.

Care of Plumbing Fixtures: All plumbing fixtures are subject to damage and the greatest care is necessary in their use. A blow strong enough to crack or chip china also cracks and chips enamelled iron. The advantage of china is merely that when it is chipped no black metal shows through the surface. Once damaged, neither can be repaired satisfactorily, which is why it is so important to care for them well.

Ten Don'ts for Plumbing Fixture Care

1. Don't use strong cleaning solutions like washing soda or gritty abrasives. Anything which cleans an enamelled or china surface too strenuously may take the finish with the dirt.
2. Don't allow a drain-pipe solvent to rest on any part of the enamelled

surface. Pour it a little at a time directly into the drain and wash it down immediately. All enamelled surfaces are subject to "etching" by acids. Vitreous china fixtures usually are impervious to the acids formed by drain-pipe solvents.

3. Don't leave a triangular sink drainer unemptied for long periods, as acids from the foods drain slowly and can spoil the sink finish.
4. Don't use a rubber drainboard mat. It may take the glaze off enamel or china.
5. Don't let leaks in faucets go unmended. Rust stains from a slow drip may penetrate too deeply to be removed without taking the glaze with them.
6. Don't scrape pots and pans across the surface of the sink. They often leave gray marks which are hard to get off without undue wear on the surface.
7. Don't chop ice on the drainboard—ice picks can crack the finish.
8. Don't ever stand in the bathtub with shoes on. A cracked, scratched tub results from heavy soles and protruding nails in heels.
9. Don't develop photographic films in the sink, lavatory or bathtub; some of the chemicals used may spoil the finish entirely.
10. Don't paint or redecorate kitchen or bathroom without carefully covering all fixtures, as paint spots on enamel and china surfaces can be removed only when dry with a razor blade that is apt to remove the glaze as well.

(For information on care of hot-water heaters, see page 448.)

Bathroom Planning

The new ideal of a bathroom for every bedroom in the house has affected the size of bathrooms, even in those homes where one bathroom serves the whole family. Bathroom fixture manufacturers have scaled down their fixtures and developed new models, such as corner tubs, lavatories with towel racks and the like, which allow fixtures to be placed in smaller rooms. Even an oversized closet can be utilized for an extra bathroom, if ventilation is provided. The ideal today is a compact, efficient room, with as many facilities provided in as small a space as possible. There are six basic plans for square or rectangular bathrooms, which are available through fixture manufacturers or neighborhood plumbers.

In planning a bathroom for your home, it is well to keep in mind a few general principles which may save you regrets later:

1. The toilet should be separated from the tub and lavatory as much as possible, either with a partition, a recess, or a separate stall, to allow for privacy.

2. Bathroom windows should be placed to give light where light is needed, usually over the lavatory for daytime shaving and hair dressing. Avoid drafts over the tub space. Don't place windows over the tub if it can be avoided.

3. Bathroom walls should be splashproof at least halfway up, all the way where showers are used. Tile and linoleumed floors should be carried up high enough on the wall to avoid leakage over the joint.

4. General illumination for the room should be provided by central fixture or lights over the lavatory, controlled by a switch at the entrance door, preferably out of reach of bather or showerer who should never handle it with wet hands. (See page 102.)

5. Where savings in installation costs are desired, back the bathroom on a wall of the kitchen or, in a two-story house, place bathroom directly over the kitchen, allowing for the use of a common supply pipe for both rooms.

6. In choosing fixtures, remember that white always is cheaper than color of the same quality, and allows for change of color schemes in curtains, towels, etc.

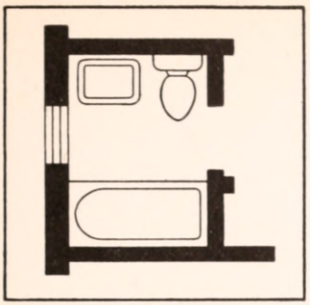
7. Where there is no space for an extra bathroom in a house used by a large family, consider installing two lavatories, to cut down washing-up time.

8. Where space will not permit a tub with shower over it, especially in a second bathroom, use a stall shower in place of the tub.

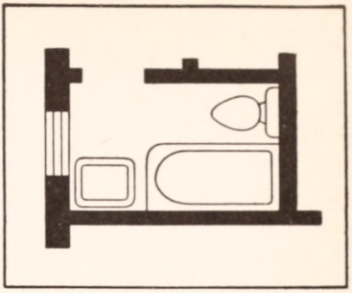
9. Don't forget to provide storage space for towels, soap and wash cloths in the bathroom. This may consist of cabinets beneath the lavatory, drawers at one end of the tub, built-in closets, niches, etc.

Bathroom Fixtures: Although there are plans for one-piece bathrooms in the offing, with all the fixtures moulded together with walls and floors so the whole room can be installed at once, the usual way to purchase is to choose each fixture separately.

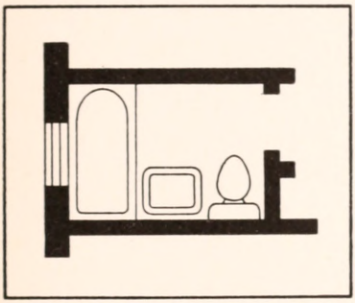
(*a*) *Bathtubs:* Choose one that goes down to the floor with no space beneath it to be cleaned. Recess it in a wall if space allows. Square tubs measuring four feet across are useful in corners. Sunken tubs, while safer to use because no climbing in is involved, are comparatively expensive and require special floor construction.



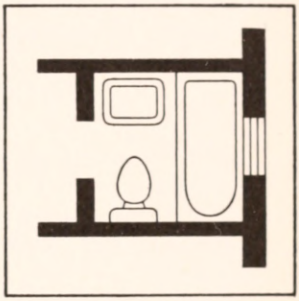
Plan A



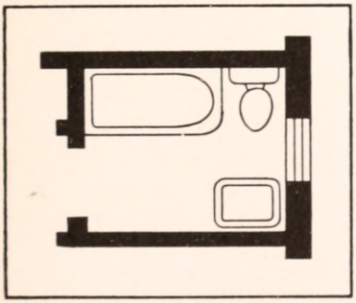
Plan D



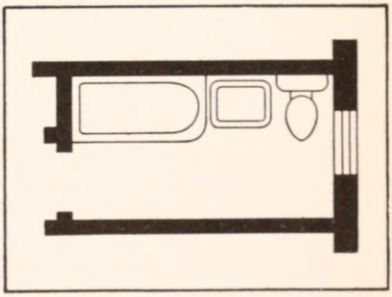
Plan B



Plan E



Plan C



Plan F

Six typical bathroom floor plans.

(*b*) *Showers:* The least expensive shower is over the bathtub, for no wall or floor construction is necessary. Sheets of glass make ideal splash-proof panels, but are relatively expensive. Types of shower curtains and their care are discussed on pages 245–246.

(*c*) *Shower stalls:* Many kinds are available: painted lightweight metal with rubber receptor base, those mounted on a wooden frame covered with waterproof linoleum, tiled stalls, etc. They may be installed in most instances without tearing up walls and floors. Extra care must be taken to guard against leaks at the floor joints. Bases must be scrubbed frequently.

(*d*) *Lavatories:* Many designs are available for practically any purpose: pedestal lavatories, chrome-legged ones, hanging lavatories without underpinning, and lavatories with built-in storage cabinets. A shelf at the back of the lavatory is useful for holding bottles, powder, etc. Towel-bars at sides of lavatories mean no necessity for using wall space for towel racks.

(*e*) *Toilets:* See that there is a solid base at the floor so cleaning around the toilet is easy. The seat should not be too high. Standard height is about 15 inches from the floor. Action should be quiet. Toilets with concealed tanks are particularly applicable to new rooms.

Plumbing Troubles and Their Cure

Only the simplest sort of plumbing repairs usually can be done by the householder himself, but knowing whether the trouble requires a minor or a complicated repair is essential. There are a few things any one can do before calling a plumber.

1. *Clogged pipes:* (*a*) First get out any lint or hair that may have collected in the strainer, using a piece of strong wire bent into hook shape.

(*b*) Then try one of the commercial preparations for opening the drains. Use it as directed and let it stand in pipes overnight.

(*c*) If that doesn't work, use a rubber suction cup on the end of a stick, called a "plumber's friend." Pour hot water down the drain and place the suction cup over the outlet, working it up and down to pull on whatever material is stopping the pipe.

(*d*) If the pipe still drains slowly or not at all, a long spring or flex, called a "snake" by the plumber, may be forced from the water seal beneath the sink several feet into the pipe. The water seal has a U-shaped pipe at its lower end, with a plug which can be removed to give

access to the seal. Place a pan under the seal while working, to catch dirty water which will drip out. When the "snake" has twisted an opening in the grease, replace the plug and flush the sink with very hot water. This is not a difficult, although a messy, job.

If none of these methods works, the clogging is of a serious nature, due to scale in the hot-water pipes or something like that, and you will have to call a plumber.

2. *Toilet stoppage:* Push the rubber cup end of the "plumber's friend" into the outlet in the toilet bowl, working it up and down rapidly to build up suction. If the passage at the base of the bowl is clogged, this should open it up. If flushing still seems sluggish, test the flush handle on outside of tank. Maybe it has worked loose and merely needs tightening. If the trouble is more serious, call a plumber.

3. *Toilet tank dripping:* If the water continues to drip after the toilet has been flushed, probably the rubber tank ball has worn out and should be replaced. Standard balls can be purchased inexpensively and installed by a layman. Turn off the water in the supply pipe (know where the shut-off valve for that pipe is) and lift the top off the flush tank. Hold the rod connected to the rubber ball in one hand, and unscrew the ball with the other. Screw new rubber ball on in its place. Turn on the water.

4. *Dripping faucets:* When water continues to drip from faucets after they are closed, it usually indicates the washer has worn out. A new one is installed easily.

First, close the stop-valve shutting off water to the faucet. Then grasp the faucet handle firmly in one hand, using a wrench in the other to unscrew the nut around the faucet. It is a good idea to insert a piece of paper or a cloth between the nut and the wrench, to protect the finish of the faucet from bite-marks. When the faucet handle comes out, bringing with it the defective washer, unloosen the screw at the center of the washer, using a screw driver. If the screw sticks, apply a few drops of oil and tap it with the screw-driver blade.

Replace the old washer with a new one, preferably of special composition, turning the dull side toward the supply pipe. Formerly rubber washers were used for hot-water faucets and leather ones for cold water, but special composition washers may be used for either. Replace the screw on the handle shaft and tighten the nut. If the faucet turns with difficulty, a drop of oil in the socket of the shaft will aid in tightening the nut.

Replacing the washer in a four-ball compression faucet, in which

the washer is not at the base of the faucet stem but set back behind the stuffing box, is the same—except that the stuffing box must be unscrewed instead of the screw.

5. *Frozen pipes:* If pipes have been inadequately protected from extreme cold, as when a house has been closed for the winter, or pipes are exposed to below-freezing temperatures without insulation, thawing must be done carefully. Shut off the water as soon as you discover the freezing. Never thaw the middle section of a pipe first. Open a faucet and start at the supply end leading toward the thawed section. If it is a waste pipe that has frozen, work from the lower end.

Apply boiling water, hot cloths, an electric pad or an electric flat iron to the outside of the pipe, if the pipe is accessible. This is not difficult for a layman to do. If a hidden pipe has frozen, you are wise to call the plumber, however. Thawing a hidden pipe involves opening the pipe at the nearest accessible threaded connection below the frozen section, and pushing a hose of small diameter into the pipe. Connect the visible end of the hose to a funnel and pour hot water into it. The hot water will melt the ice and the water will run out of the opening in the pipe into a pail placed there. As the ice melts, push the hose farther and farther in. It is often a lengthy and always a messy job.

Plumbers nowadays have electric pipe thawers which thaw pipes very rapidly. Unless great care can be taken in doing the job yourself, it is better to employ a professional.

6. *More serious troubles:* Other plumbing problems which arise usually require the efforts of a skilled plumber, and should not be attempted by the layman, except for temporary adjustment until the plumber comes.

(*a*) *Pipe Leaks:* If the leak is in a visible section of the piping, a piece of inner tubing from an old tire or a strip of leather should be fastened around the leak, with a sheet-metal collar over it to hold it in place. The metal can be attached with metal quilting clamps from the local hardware dealer. If these materials are not available, call the plumber at once. Do not consider this a permanent mend.

(*b*) *Rusty Water:* Ascertain by questioning neighbors using same water source or by checking with water commissioner whether corrosive condition exists in the water of main supply lines. Rusty water is usually a red flag indicating corrosive content of the water, and the material of your pipes should be checked against it. If it is not the character of the water, see whether a galvanized steel storage tank has

lost some of its galvanized coating in service or was sold to you in defective condition. Install a new boiler with rust-proof lining.

Or, if you are using an iron water-back in your kitchen range to heat the water before it goes to the storage tank, this may be the cause. Replace the old water-back with one having copper piping.

(*c*) *Low Pressure in Pipes:* This may be due to lack of proper pressure regulation on your storage tank. This is easily adjusted. Ask your plumber to show you how to adjust pressure, if automatic control fails. Follow his instructions to the letter, remembering that too high pressure is more dangerous than too low.

Lack of pressure also may be due to incorrectly sized pipes. There is no cure for this except repiping.

(*d*) *Noisy Pipes:* The principal cause of noise in water pipes is *excessive pressure*. First, have the pressure checked—it should not exceed 50 pounds. A pressure regulator should be employed to keep it below this limit automatically. Then see about *pipe sizes*. Incorrectly sized pipes make for excessive pressure, too. If they are too small there is a strain on the system which causes thumping.

Improperly Installed Pipes, which do not employ lead or felt-lined hangers and clamps to keep the water pipes from coming in contact with other metal, cause noise too. Pipe edges must be smoothed with a reamer before they are installed, or the sharp edges will cause whistling and even screeching sounds when the water strikes them. Valves, faucets and fittings must have rounded edges. Washers must be tight. The pitch of the pipes, always upward toward the outlet, must be sufficient to prevent air from accumulating in pockets, forming a barrier which creates noise when water presses against it. Pipes too tightly clamped in place to allow for expansion and contraction of the metal may cause noise.

Vibrating Pipes, caused chiefly by loose valves, make a humming sound. Defective valves and faucets should be repaired or replaced to eliminate this.

Water Hammer, or a noise which develops when the faucet is turned quickly, often is caused by the velocity of the flow and the suddenness of the stopping, usually in pipes which have too short turns. Special devices consisting of air chambers are useful to absorb the thrust and vibration in supply lines. They act as cushions to absorb the shock of the water flowing the pipes at high speed.

(*e*) *Too Hot Water:* Water for domestic use should be as close to 140° F. as possible. Water above 160° F. is dangerously destructive to

pipes, joints and so forth, and may even scald the person using it.

Regulators which can be set for the desired temperature, usually below the highest temperature allowed, should be part of every hot-water heater. Have your plumbing and heating contractor inspect the attachment when he cleans out the heating system and hot-water heater, to make sure it is in good condition. If it is working properly and the water still seems to you too hot, adjust the regulator for a lower temperature.

CHAPTER XXVIII

THE UTILITIES

The services provided in a modern home far exceed anything which was known in the past. From outside the house today we get electricity for light and power for mechanical appliances; gas for cooking or heating; water for washing and drinking; sewage disposal; telephone service.

All these utilities are part of housekeeping, in the sense that we must know how to plan them, how to use them efficiently and economically, how to care for them and keep them in good condition.

ELECTRICITY

The commonest and most widespread use of electricity is, of course, for illumination. It was the first use. Houses were wired originally to make possible the light from an electric bulb hanging from a cord in the center of a room. But the use of electricity has increased to such a degree that even modern lighting fixtures, sidewall brackets, table lamps and indirect lighting channels which provide illumination today do not tell the whole story.

We have added vacuum cleaners, refrigerators, ranges, coffee makers, water heaters, radios and a host of appliances. Obviously the same wires which brought electricity from the main lines into our homes for the scattered single light bulbs of the early days are no longer adequate to bear the load now that we use it so abundantly for light, heat and power.

Our new standards demand adequate wiring both for present and for future needs. Adequate wiring today must provide for enough lighting and convenience outlets for all electrical needs, proper switching facilities for their control and wires large enough to conduct economically a full measure of electrical energy to all our lamps and appliances.

How do you know whether you have adequate wiring in your home? If you are in doubt, check the signs of inadequacy which are listed with their probable causes on the following page.

Sign	*What's Probably Wrong*
Lights dim perceptibly when appliances are operating	Not enough branch circuits or circuit wire too small.
One appliance must be disconnected to plug in another.	Not enough convenience outlets.
Heating appliances, like irons and toasters, come up to temperature slowly.	Circuit overloaded or not large enough wire.
Rooms must be entered in darkness.	Not enough or improperly located switches.
Furniture must be placed inconveniently to bring it near outlets.	Convenience outlets badly located or not enough of them.
Fuses frequently blow out.	Overloaded circuit.

If any of these signs is present in your home, get a reliable electrical contractor to check the system against modern standards of adequate wiring (see page 477.)

It will help in understanding these standards if you have a clear understanding of a little electrical theory. Know how electric current is measured and the way its cost is reckoned.

Electrical Theory

Electricity is a form of energy produced in a huge electricity pump called a *generator,* flowing along wires from a distant power house to your home. There are two wires, because one path must be provided for current to come in on and another for it to leave by. Compare it with a woman who comes in daily to do the housework. She enters in the morning, performs her tasks, goes home tired in the evening. At home she eats and sleeps so that she may return refreshed. So we think of current as entering the home, doing its work, going back to the power house to be refreshed and ready to return for more work. The entire in-and-out path of current is called a *circuit.*

There is a circuit from the power house to the home, and in the home there are various branch circuits, each consisting of two wires, leading from the distribution center to various rooms and back to the main circuit box again. All the materials with which current comes in contact set up a resistance to its flow; some materials offer little, others considerable. Large wires have less resistance to the current than small ones, short wires less resistance than long ones.

In order to force the current through a wire against resistance, a push is required from the dynamo. The more resistance there is, the harder the pressure necessary. This pressure is called *voltage*. Pressure commonly in use is from 110 to 120 volts, although some heavy-duty heating appliances such as ranges require a pressure of from 220 to 240 volts.

Resistance also has the effect of turning electricity into heat. Remember how warm we get, lifting heavy weights? Heat is a desirable product in such electrical appliances as irons, toasters and ranges, so wire which has a comparatively high resistance is used. Where heat is undesirable, as in house wiring itself, material like copper which has very little resistance is used. Material giving little resistance is called a *good conductor*.

All materials conduct electricity to some extent, but some allow so little current to flow through them that it cannot be measured. These materials are called *non-conductors* or *insulators*. Examples are glass, porcelain, rubber, bakelite, heavy paraffin oils and air. They are used wherever safety demands that current should not pass, as for instance in the glass insulator that secures the service wire from the main power lines to the outside wall of a dwelling. The skin on our bodies makes a fairly good insulator when it is dry, but singularly enough when it is wet it changes into a good conductor. Hence this caution: *Never handle electric wires or appliances with wet hands.*

There are two types of pressure which make electric current flow through wires. One is always of the same intensity in the same direction; it is called *direct current,* popularly abbreviated D.C. The other type of pressure changes its direction two or more times with each revolution of a shaft in the generator at the power house. Each time direction changes, pressure decreases to nothing, then rapidly returns to full strength. It is called *alternating current,* or A.C. Most electric power today is A.C. but some cities and some sections of other cities supply D.C. Light bulbs, some motor appliances and many heating devices run equally well on either kind of current, but much household electrical equipment is built to run on A.C. only. An electric clock designed for A.C. use does not run on D.C. and may be damaged if connected to a D.C. outlet.

Another term that should be understood is *cycle*. Two changes of direction—pressure up to maximum, back to nothing, up again, then down—make up a cycle. Alternating current has 60 cycles because direction changes 120 times a second. The number of cycles is called the *frequency*. Most A.C. appliances run only on one frequency and must be bought for that. If you live in some parts of Buffalo, for example,

you may need appliances which work on 25 cycles; in New York City and most other large cities it is 60 cycles.

A house circuit may be traced from the point where the wire carrying the current from the power house is attached to the outside wall of the house. The current usually travels down the side of the house and into the basement on a wire inside a metal pipe. The wire, like all others used in the house, is of copper, insulated with a sheath of rubber and fabric. In the basement the entering current runs through first, a *cutoff switch,* placed there to make it possible to cut off all current when you wish to leave the house for some time, or in an emergency such as a fire, and second, the distribution center.

Fuses are safety devices. A short length of metal is provided in them which melts at a comparatively low temperature, so that if too large a current flows through the fuse the heat it gives off makes a break in the circuit and no more current can pass. Overheating and danger of fire are prevented. Fuses are made to carry different loads of current before they melt. That is why we must match the fuse to the circuit it is protecting. *Circuit breakers,* which also cut the flow, may be used in place of fuses. The unit of measurement for the flow of electric energy-particles is *amperes,* frequently abbreviated as amps.

From the fuse the current next is conducted through a *meter* or device which measures the amount used. By reading the dials on the meter the power company knows how much current has been used.

The wire conducting electricity goes from the meter to a series of *fuse blocks,* each one containing fuses for one *branch circuit* serving one or more rooms. Branch circuits must be carefully planned to carry a specified amount of electricity. If too many lighting fixtures or appliances are supplied by the same branch circuit, there will be an overloading of the circuit and the fuses will blow out. If too few fixtures and outlets are supplied, the circuit is not utilized to its full capacity and the cost of the installation thus is increased for no practical purpose.

The wire carrying electricity may run through air spaces supported on porcelain clamps (which are insulated) and through beams and partitions in porcelain tubes; or it may be encased in flexible (or rigid) metal tubes or metal piping; or it may be wrapped in a durable fiber protection. The return wire from lights or outlets always follows the same path back. Because of this, wires usually are assembled in pairs, as in a lamp cord, to make the installation simpler and cheaper. You see but one wire while actually there are two, or two sets of wires, enclosed.

What happens when current is used in a circuit is, briefly, this: Two brass prongs of an appliance or lamp plug fit into parallel slits in the

face plate of the convenience outlet and connect with a pair of spring sockets inside the outlet, which are in turn connected to a branch house circuit. As soon as the connection is made the current starts to flow through:

1. one wire of the branch circuit into the spring socket
2. through the brass strip of the plug
3. up one wire in the lamp or appliance cord, and
4. through the appliance; then
5. back along the other or return wire in the cord
6. to the return wire in the branch circuit
7. on out of the house through the main circuit box.

Every part of the connection is important, for the failure of any part breaks the whole connection. When an appliance cord is subjected to long wear and the insulation covering each of the two wires within it frays, the two wires may come in contact with each other or another conductor, spark and become hot enough to blacken, char or even burn any surface they touch. If electricity crosses from one wire to another without following the path designed for it, a short circuit occurs.

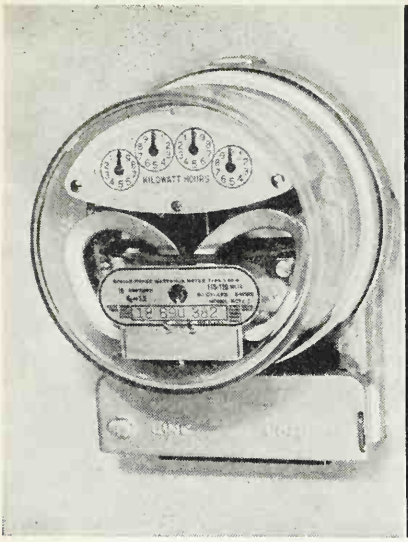
Measurement of Electric Power and Its Cost

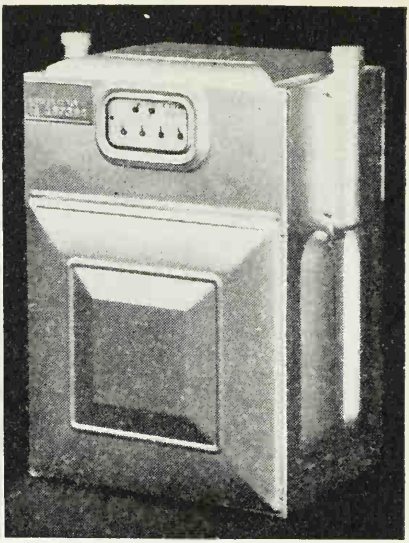
Electric power is measured in *watts,* but this unit is so small that for convenience power is reckoned by thousands of watts or *kilowatts.* The energy consumed is measured in *kilowatt hours,* or the number of thousand watts multiplied by the number of hours it is used. This unit of measurement is abbreviated Kw. H.

To find the cost of using a 100-watt electric-light bulb for three hours, figure that 100 watts equals 1/10 of a kilowatt (1000 watts) and three hours means 3/10 of a kilowatt hour's use. If electricity costs, say, 5 cents a kilowatt hour in your district, take 3/10 of 5 cents, which is one and one-half cents for the three-hour use of that particular bulb.

But many power companies now use the *sliding scale of rate-setting,* which makes the charge for electricity over a certain amount cheaper per Kw. H. than that for the original block of electricity. The company must pay a large amount of money to maintain its poles, wires and generating equipment, whether its customers use one kilowatt hour or a thousand in a month. The company therefore can produce large amounts of electricity cheaper per unit than it can small ones, since the poles, wires and generating equipment must be maintained in either case. It therefore passes on some of the saving to its customers.

A base rate is established under the sliding scale, by which—for example—from three to ten cents per Kw. H. is charged for the first





Left: A typical electric meter used in home installations. On this page are directions for reading the meter.
Right: A typical gas meter used in home installations. Directions for reading a gas meter are given on page 488.

block of kilowatt hours used. For the next block the rate is less; for the third still less, and so on. The result is that a family using a large amount of electricity pays less per Kw. H. on the average than a family using a small quantity.

Reading the Meter: Every month the company takes a reading of the meter, which has a series of four pointers geared to the rotating shaft of a tiny motor. The pointer at the extreme right measures units in kilowatt hours; the one to the left of that measures units in tens of Kw. H.; the next measures hundreds, and the left-hand pointer thousands. Read the meter from left to right and set down the figures in the same order as they appear against the pointers. If any pointer lies between two figures, *use the lesser number.* For instance:

Pointers (reading l. to r.)	*Position*
First	Between 6 and 7
Second	Between 1 and 2
Third	Between 8 and 9
Fourth	On 5

The reading would be 6185 Kw. H. Every month the company takes a reading, subtracts the total of kilowatt hours of electricity used since the last bill was sent, and bills you for the difference. Because of the subtraction process, even though the meter reader may make a mistake, it will be corrected next time the meter is read.

Every time you use current, the pointers move slightly to indicate the amount on the meter. The wattage of the lamp or appliance predetermines how much current each will use.

Typical Wattage Consumed by Various Electrical Appliances

	WATTS		WATTS
Air Conditioner	1000	Irons	660–1000
Air Heaters	1500	Mixers	110
Bottle Warmers	660	Oil Burners	1000
Casseroles	325	Percolators	400
Chafing Dishes	660	Portable Heaters	1000–1200
Clocks	2	Radios	100
Coffee Makers	400	Ranges	8500
Combination Stoves	1200–1650	Refrigerators	225
Curling Irons	25	Roasters	635–1320
Deep-well Cookers	450–660	Sewing Machines	25
Dishwashers	150	Sleeping Blankets	100
Egg Cookers	660	Sun Lamps	150–400
Fans	50	Toasters	450–1100
Floor Polishers	400	Vacuum Cleaners	300
Hair Driers	450	Vibrators	60
Hand Cleaners	140	Waffle Irons	500–800
Heating Pads	60	Washers.	250
Hot Plates	600–1320	Water Heaters	2000–3000
Incandescent Bulbs	10–200		
Ironers	1320		

Figuring Operating Costs of Electrical Equipment

To get an idea of how much it costs to use various kinds of electrical equipment, first figure the number of kilowatt hours per month for each appliance you use. (See page 473.) Remember the refrigerator

and water heater do not run continuously, nor do you use all the units on a range at once as a regular thing. Use varies among different families but some typical figures which can be used as a guide follow:

Clocks	2 Kw. H. per month
Dishwashers	2¼ Kw. H. per month
Ironers	2 Kw. H. per person per month
Irons	1 Kw. H. per person per month
Mixers	½ Kw. H. per month
Radio	8–10 Kw. H. per month
Range	30 Kw. H. per person per month
Refrigeration	40–50 Kw. H. per month
Roasters	1 Kw. H. per *meal*
Toasters	4 Kw. H. per month
Vacuum Cleaners	½ Kw. H. per month
Washers	2 Kw. H. per month
Water Heaters	150–600 Kw. H. per month (average 340)

Then make a list of appliances to be used and the amount of current consumed monthly by each, as:

Lights	25 Kw. H.
Iron	6 Kw. H.
Radio	7 Kw. H.
Washing Machine	3 Kw. H.
Shallow-well Pump	9 Kw. H.
Refrigerator	50 Kw. H.
Range	150 Kw. H.
	250 Kw. H.

Then, set down the rate schedule taken from your contract for electric service (on the back of a bill). The example below is not to be considered average for the country, but is merely assumed for illustrative purposes:

First 20 Kw. H. at 10¢ per Kw. H.
Next 30 Kw. H. at 5¢ per Kw. H.
Next 50 Kw. H. at 3¢ per Kw. H.
Next 100 Kw. H. at 2.5¢ per Kw. H.
All over 200 Kw. H. at 2¢ per Kw. H.

(If there is an offpeak load rate for storage water heaters, figure it in at its low night rate—a possible 1 cent per Kw. H.)

Prepare a table of the appliances, rate schedule and current consumption, as shown below:

Appliance	Current Used	20 Kw.H. at .10	30 Kw.H. at .05	50 Kw.H. at .03	100 Kw.H. at .025	Over 200 at .02	*Cost*	*Subtotal*
Lights	25	20	5				$2.25	$2.25
Radio	7		7				.35	
Washing Machine	3		3				.15	
Flatiron	6		6				.30	
Shallow-well pump (6000 gal.)	9		9				.45	3.50
Refrigerator	50			50			1.50	5.00
Range	150				100	50	3.50	8.50

Estimated monthly current 250 Kw. H. cost, $8.50.

Adequate Wiring Standards

It is important to remember that adequate wiring in any house has a twofold benefit from the householder's point of view:

1. It makes operation of electrical appliances easier, quicker, less liable to temporary breakdown, and *also*
2. It prevents waste of electric current in its path in and out of your house, current for which you pay whether you are getting the most out of it or not.

Check your house wiring against the following standards, based on those drawn up by the National Adequate Wiring Bureau.

I. Circuits

Main circuit

1. Service wire, carrying current from the main lines to the inside of your house, may be Number 6 (American Wire Gauge) for a small house, but for a house with more than 1500 square feet of finished floor area (usually any house containing over 5 rooms) the wire should be

at least Number 4 AWG. Usually there should be three of these wires from the main line to the distribution center.

2. *Number of branch circuits* must be sufficient to carry current to all lamps and appliances without overloading any one branch when all connections are used at the same time. Average house has minimum of three lighting circuits, plus one appliance circuit. Rule is:

(*a*) A lighting branch circuit for every 500 square feet of finished floor area.

(*b*) At least one appliance branch circuit in addition, to supply kitchen, pantry, dining room, etc.

(*c*) Separate appliance circuits for laundries, well-pumps, etc. Electric ranges, attic fans and electric space heaters always should have separate circuits.

II. Wire Sizes

The copper content of branch circuit wires must be large enough to deliver the current at full voltage supplied to the house. This is the minimum code requirement for safety:

1. Lighting branch circuits use at least No. 14 wire.
2. Appliance branch circuits use at least No. 12 wire.
3. Special appliances require larger wire, *i.e.*:

(*a*)	Electric range—special 3-wire circuit of No. 6 wire.	
(*b*)	Electric water heater—No. 10 wire for 110–120 volt type. No. 12 wire for 220–240 volt type.	
(*c*)	Other heaters (Laundry hot plates, fireplace heaters, etc.)	No. 10 wire.
(*d*)	Oil burner or stoker	No. 12 wire.
(*e*)	Water pump motor (Where no service from street water mains)	No. 12 wire.
(*f*)	Attic fan	No. 12 wire.
(*g*)	Electric space heaters	No. 10 wire.

III. Wire Runs

Wiring should be planned so that there is the least possible distance from the distribution center to the convenience outlets and lighting

The old-fashioned fuse box in the basement has given way to the modern fuse panel, flush mounted on the kitchen wall, or the wall of some other convenient room.

fixtures. If a circuit is unnecessarily long the voltage will not be delivered at its required strength. This result is known as "voltage drop." If a circuit loses as much as 5 volts between the distribution center and the outlets, the circuit is too long. As a result, lamps will lose considerable brilliance, appliances will operate slowly or inefficiently, and while this is going on, some of the electric power recording on the meter will be prevented from performing useful service.

A house wired with a two-wire system at 120 volts should get current at that voltage at all points where it is required. With a three-wire system rated at 120–240 volts, current should be delivered at the required strength of 120 volts to lamps and portable appliances, and at 240 volts to heavy-duty equipment.

IV. Fuses and Circuit Breakers

Fuses must be matched to the circuits they are protecting and no other material should ever be substituted for a fuse, even in an emergency, as such materials will not protect the circuit and a fire may result.

Proper Fuses to use at 120 *volts* (usual residence voltage)

Type of Circuit	*Fuse Capacity*
Lighting only	15 amperes
Small appliances, like fans (not over 660 watts)	15 amperes
High wattage appliances only, like roasters (not over 1650 watts)	20 amperes
Service entrance line	30 amperes or larger, depending on wire size

There are two common types of fuses: plug and cartridge. Insist that either kind bear the label of the Underwriters' Laboratories. *Plug fuses* often have transparent tops and screw bases and come in sizes up to 30 amperes; *cartridge fuses* are of fiberboard cylinders capped at each end with a brass-plated steel cover, and are used for all sizes over 30 amperes.

When inserting fuses be careful not to let your fingers come in contact with any metal part either of fuse or socket in electrical contact with the circuit. To insert a plug fuse, put it into the socket in the fuse-block as you screw in an electric light bulb. To insert a cartridge fuse, push it into the pair of brass clips on your fuse box. Cut off the current before installing new fuses. Fuses never should be installed carelessly; they may give a shock if the switch is closed.

In more recent installations *circuit breakers* sometimes are used in place of fuses. These are devices which automatically trip a lever breaking a circuit whenever the current flowing in a wire becomes too great for safety. To restore the circuit, after you have located the cause of overloading, it is necessary only to snap the switch to restore the position of the lever on the circuit breaker box.

V. Convenience Outlets

There should be enough outlets for each room, according to its use. The general rules are:

1. In living room, bedroom, reception hall, sun room and enclosed

porches no wall space unbroken by a doorway should be more than 6 feet from an outlet. For example, a 12-foot unbroken wall should have at least one duplex convenience outlet in its center, but it is often more convenient to have a duplex outlet near each end of a wall space for large pieces of furniture. Basically one duplex convenience outlet should be placed in every usable wall space 3 feet or more in length.

2. In halls, one duplex convenience outlet for every 20 feet or major fraction thereof, of hall or passage.

3. In dining room, dinette, breakfast room or breakfast nook, two duplex outlets in each room having a floor area of 100 square feet or more. In very small dining spaces, one duplex outlet at table height may be sufficient. In larger rooms, place duplex outlets in every wall space where there is room for a buffet or serving table.

4. In bathroom and lavatories, a duplex convenience outlet 3 or 4 feet from the floor, not adjacent to the tub or where water may splash on it and not where a person in the tub can reach it. (See Cautions, page 482.)

5. In kitchen or kitchenette, and in pantry, install duplex convenience outlets at elbow height adjacent to each work surface. Also install single outlets for refrigerator, dishwasher-sink, clock and ventilating fan having a wall switch control.

6. In laundry or laundry space, outlets should be conveniently located for connecting washer, ironer, hot plate, portable drier, etc. A single convenience outlet may be suspended on a heavy smooth rubber cord or rigid conduit (unless the ceiling is quite low) to a point 6 feet above the floor from an outlet box in the ceiling 3 feet in front of the laundry trays or tubs.

7. In basement, have at least one duplex convenience outlet for electric tools, etc., if there is a workshop in this location.

8. In the garage, one duplex convenience outlet on the rear wall at each car location, not less than 4 feet from the floor, is recommended.

9. In the attic, at least one duplex convenience outlet for general use.

10. At entrances, one weatherproof convenience outlet for decorative lighting is desirable.

11. In porches, terraces, patios, etc., at least one waterproof convenience outlet for each 15 feet of house wall is desirable.

VI. Switches

All lights should be switch-controlled from the main entrance to the room, with additional switch control of the ceiling light, if there is more than one entrance doorway and doors are more than 10 feet apart, so that you can light your way ahead as you enter a room and turn out the lights as you leave from another door. (For number and location of switches, see Lighting Outlets, page 480.)

There are four types of switches:

1. Those operated by tripping a lever.
2. Those operated by pushing a button.
3. Those operated by turning a button.
4. Those operated by pulling a chain.

The lever and button kinds are always wall-switches; the chain type is used for wall or ceiling. Lamps operate by all four kinds. All are built to stand many years of normal wear and tear. They should never be tampered with, used as playthings or put to uses for which they are not intended, such as hooks for clothes hangers, etc.

Safety Factor in Electrical Work

The wiring of a house is protected through the National Electrical Code set up by the industry itself. It is made up of a set of regulations which must be observed by every licensed electrician in order to have each installation certified by a locally authorized inspector. Many of the points covered in the National Electrical Code have been enacted into ordinances in various communities. All the householder has to do in these communities is have a regular inspection made and certificate issued, to be sure that his wiring is safely installed. In those communities where laws have not kept pace with higher standards, a copy of the National Electrical Code, published by the National Board of Fire Underwriters, 85 John Street, New York City, should guide any one making the installation.

However, once the house is wired, certain cautions may be observed by the householder himself in handling electrical equipment. Below is a list of ten important cautions which should be practiced by every one:

1. Never touch any electric cord or fixture with wet hands.

2. Do not overlook kinked, trampled or cut electrical cords; if they look worn, don't splice them—replace them before trouble starts. Any frayed, worn cord may prove to be a dangerous one.

3. Keep a bulb in every lamp socket, for if a finger is accidentally inserted in an empty socket a shock may result.

4. Get only appliance cords which bear the bracelet label of approval by the Underwriters' Laboratories, and protect all lamp and appliance cords from water or rough treatment. Don't run cords over radiators or steam pipes or in door jambs; such squeezing might break the insulation covering the wires.

5. Read and follow carefully all directions which accompany appliances, particularly that calling for keeping all moving parts properly oiled. Avoid both over-oiling and under-oiling.

6. Don't use an appliance you know has a flaw in it. Electrical energy may be wasted and the fault may become a danger.

7. Avoid running long extension cords over the floor; they are not only unsightly and easily tripped over but may become hazardous. Some city ordinances forbid the domestic use of extension cords over 8 feet long. If you need a long cord, take the appliance to your electrical shop and have a longer cord permanently attached to the appliance.

8. Don't run cords under rugs. Apart from the slight fire hazard present because of the possibility of a short circuit in the hidden cord, the cords become worn more quickly if they are walked over, even underneath a thick floor covering.

9. Don't use a rubber-moulded wire, bearing outlets for plug-in equipment at intervals of several feet except for *lighting* equipment. The wire is certified by the Underwriters' Laboratories only for that purpose, and should not be used for appliances.

10. Don't economize on fuses. Get the best and be sure they are the right size.

Electrical Repairs

Minor repairs, such as repairing disconnected damaged cords, are about the only ones which should be attempted by the layman. Installing control switches on appliance cords, for example, is much too complicated because of the number of parts which must be put together exactly, to be trusted to any but an experienced electrician. Remember, one small mistake may do more damage than blowing out a fuse. Local ordinances often require that all repairs be done by competent licensed electricians. Amateur installations may mean loss of fire insurance compensation.

The first rule for all home electrical repairs, even those which do not concern the wiring at all—such as removing a glass-covered ceiling

fixture to change the bulb—is NEVER TO DO ANYTHING UNTIL THE ELECTRIC CURRENT HAS BEEN SHUT OFF. Appliances should be disconnected before they are checked.

If a lamp fails to light, or an appliance to heat, first try a fresh bulb or plug the appliance into another convenience outlet, to make sure the trouble lies in the bulb or appliance and not in the circuit or outlet.

The most common trouble encountered is a broken cord, which frays or breaks near the plug-in point.

How to Repair a Cord:

1. *Disconnect the lamp or appliance* and separate the plug from the wires by removing with a screwdriver the screws that hold them in place.

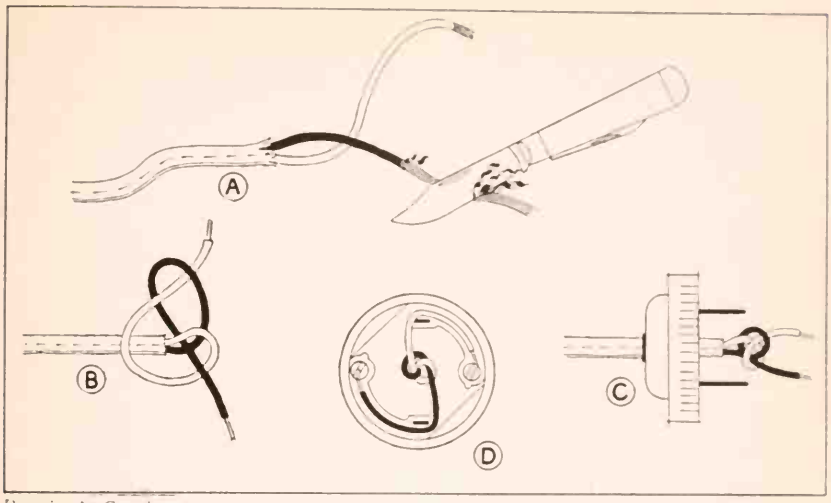
2. Locate the worn section of the cord and cut it off with a pair of heavy shears at that point. You will shorten your cord an inch or two by the process.

3. Remove the cord-covering a small distance from the end. *If the cord has a braid-covering* remove the covering for from 1½ to 2 inches from the new end of the cord. The covering can be slit by inserting a knife between the two wires. Care must be taken not to cut into the rubber covering of the wires themselves. To prevent the braid from unravelling further while you work, wrap a few turns of thread around the end and tie securely. *If the cord has a moulded rubber covering,* make a shallow cut in the end of the cord, between the two wires, and pull them apart. The cord is so constructed that it will split at exactly the right place, leaving the proper amount of insulation on each of the two wires inside.

4. Remove the insulation from each of the two exposed wires for about ¾ inch from the end. This can be done by shaving the rubber insulation with a pocket knife, exposing the several fine strands of wire. The scraping should continue until they are clean and bright. Take care that the strands are not cut or broken, so that all of the original strands are exposed for the new connection.

5. Twist the strands of each wire together to form a cable, just as you twist darning cotton to put it through the eye of a needle. Take care, though, to keep the two cables entirely separate.

6. Push the cord up through the plug, and if there is room enough, tie the two wires in a knot to relieve the strain on the two binding screws in the plug. If the plug does not allow this knotting there is no alternative but to attach the wire directly to the screws (see step eight).



Drawing by Grande

Steps in Replacing a Cord in an Appliance Plug.

1. *Disconnect the cord.*
2. Remove insulation and scrape wire clean (A).
3. Close-up of Underwriter's knot (B).
4. Cords in place, ready for ends to be fastened to contacts (C).
5. Finished result, with wires neatly fastened under screws and knot pulled down against the plug (D).

7. Pass each wire around its prong to reach its binding screw. This also helps to relieve the strain.

8. Wind the exposed bare section of the wire around the binding screw in the same direction as the screw itself is turned to tighten it in place. When the screws are tightened, no bare wire should be visible. If a few stray strands stick out from under the binding screw, clip them off. They could constitute a path for current other than the prescribed one through the plug.

Other Repairs:

If a cord is broken or frayed anywhere except at the plug end, it should be repaired by an electrician. If the homemade repair of a plug end of the cord does not eliminate the trouble, the safest thing is to get a new cord entirely. Cords and plugs are inexpensive, and can be installed correctly on the lamp or appliance at a local electrical shop.

General Rules Regarding Care of Electrical Equipment

1. Always read and follow directions given by manufacturers and dealers. Post them at the place where they are used so that they may be easily consulted by any one using the equipment.

2. Have every new appliance explained and its use demonstrated by a properly trained representative of the manufacturer or the sales agency. Try it yourself before the demonstrator leaves.

3. Keep all appliances dry and clean (see page 387).

4. Use the kind of oil specified by the manufacturer, the exact amount specified, and use it with the frequency advised. Over-oiling may be as harmful as under-oiling.

5. Be sure to disconnect the appliance from the outlet when it is not in use, especially heating appliances.

6. If repairs are needed, have them attended to before putting the appliance away. Proper care saves money by prolonging the life of the appliance.

GAS

Gas is one of the most popular utilities for the home. Its use for cooking, water-heating, refrigeration and house-heating has increased enormously, despite competition with electricity in the cooking, water-heating and refrigeration fields, and with oil and coal in the house-heating fields. It no longer competes with electricity in the residential lighting field.

The choice of gas as a fuel for any of the specified purposes depends upon three things:

(*a*) Availability of natural or manufactured gas lines.

(*b*) Comparative costs of gas with other fuels in your community (including cost of "bottled" or liquefied petroleum gases in rural districts not served by city gas lines).

(*c*) Cost of equipment with which gas is used and that with which other fuels are used.

A. Wherever piped gas is within easy reach, its low first costs, its ease of application, the speed and flexibility of its heating, and the constancy of supply make it a most satisfactory fuel for home requirements. It is easily connected to your house and regularly serviced by the gas company supplying the fuel.

B. The cost of gas in some urban areas may be less than that of other fuels for cooking and refrigeration, while the cost of natural gas and some manufactured gases allows them to compete favorably with other fuels in many places for house-heating. The cost of "bottled" gas in rural districts as compared with electricity varies with the rate for large consumers of electricity which has been established in those districts. Check comparative costs in your community.

C. Generally speaking, the equipment for gas cooking, water-heating and house-heating costs less than the same equipment for electricity, oil or coal.

How and in what amounts you use gas in your home is largely a matter of personal choice, based on conditions in your vicinity. If gas is reasonably priced, as it is in many cities, it may be economical to install not only a gas range but also a gas refrigerator, water heater and house-heating system fueled by gas. Figure the cost and then compare the total with the cost of an all-electric house, or a half-gas-and-half-electric house, or a gas-and-oil fueled house, or a gas, electric *and* oil served house. No blanket rule can be set down. These costs will vary with the kind of gas available to you, with the electric rates and prevailing costs of oil or coal, and with individual preferences in the matter of gas, electric, coal or oil cookery. (For kinds of gas, see page 431).

Usually only one kind of piped gas is available in one locality—natural, manufactured, or a mixture of the two. In rural sections "bottled" gas is the only choice: there are several kinds of these, much alike in character and price.

Measurement of Gas

Piped gas is measured as you use it, right on your own premises. You can check the amount by reading your meter regularly. The gas meter, like the electric meter, has three or four dials each with a pointer or hand marking off the amount of gas consumed by the appliances in your home, burning gas as a fuel. Gas is measured in cubic feet. The dials indicate the amounts but, unlike electric meters, they are read from right to left. The first dial is for 1000 cubic feet, the second from the right for 10,000, the third 100,000 and the fourth 1,000,000. Each hand to the left moves in a direction opposite to that of the hand to its right, or—to put it another way—the hand on the extreme right (the 1000 meter) moves clockwise, the 10,000 meter counter-clockwise, the 100,000 clockwise and the 1,000,000 counter-clockwise.

When reading, use the smaller of the two figures between which the hand on each circle stands. Thus a meter reads as follows:

Pointers (reading r. to l.)	*Position*	*Cubic Feet*
First (or 1,000 circle)	Just beyond 4	400
Second	Between 8 and 9	8,000
Third	Between 0 and 1	00,000
Fourth	Between 1 and 2	100,000
	Total:	108,400 cu.ft.

To check the result, read the meter again from left to right, thus: one—zero—eight—four hundred—and you get the same figure: 108,400 cubic feet.

It is a simple matter to subtract a previous index from the present one and so determine the quantity of gas used in the period between the dates of respective readings. As for example:

108,400 (as of June 16)
106,200 (as of May 15)
2,200 cubic feet for which you are billed.

Before a meter is placed in a house it is thoroughly tested for accuracy of registration by gas company inspectors and in some sections of the country by meter inspectors employed by the city or state. The test consists of passing a correctly measured volume of air or gas through the meter from a special measuring device, which in turn has been tested against a standard device tested and certified by the U. S. Bureau of Standards. Gas companies are careful to maintain meters in use and keep them in good condition. Many companies remove meters periodically for testing.

Bottled gas is supplied in one or two large cylinders which are set against an outside wall of the house, and in cylinders which are buried in the ground.

With the *one-cylinder type* of system, a tank truck calls periodically to measure the gas which has been used and to refill the cylinder. This cylinder is more or less permanently installed and often a meter is attached to record gas consumed.

Where there are *two cylinders,* when one is empty the feedline is transferred to the other cylinder (sometimes automatically) and the supplier then brings a new cylinder. These cylinders are portable, and installed and charged as refills are needed.

Where *buried tanks* are used, the gas usually is metered to record

the amount used, just as with city pipelines. The supplier reads the meter each month and sends a tank truck around to fill the buried tank with whatever amount of liquid gas is needed. Where there is no meter, the consumer may pay for the full amount of gas delivered to the buried tank and buy a new tankful whenever it is needed.

Service, Repairs and Safety

The gas industry justifiably calls its fuel effortless, because there is so little for the consumer to do in connection with it. All companies maintain large service divisions. Complaint calls or calls concerning any difficulty in the use of the equipment or the supply of fuel, are answered promptly. Repairs to gas lines or gas equipment should be made only by an authorized representative of the gas company. Even minor repairs or adjustments should be brought to the attention of the company. Nothing should be tampered with by householders, however experienced and trained.

Constant inspection of gas equipment and testing and standardizing by the American Gas Association Laboratories has taken care of the safety factor in this field. Look for the A.G.A. Seal of Approval for reassurance of good workmanship and design.

WATER SUPPLY

A generous supply of pure water is essential in any home. Whether you live in a city apartment or on a farm, higher standards of living require that there shall be running water in kitchen and bathroom.

In cities the provision for water supply is easy, since it is procured from the local water works at standardized local rates. Sanitary precautions, regular inspection and testing, aeration, requirements for piping and installation usually are part of urban health codes. In rural areas and some suburbs, private water-supply systems sometimes are necessary; these systems may be subject to public inspection, too, but the details of providing safe and convenient water often come more within the property owner's province than in urban centers.

Modern standards for private water supply may be summed up in the following provisions:

1. *Quality of the water:* It should meet accepted standards of purity as prescribed by the State Board of Health.

2. *Distribution:* Drinking water should be distributed through a piping system entirely independent of any other piping system, even that conveying another water supply.

3. *Service:* The distribution of water should be planned so that a continuous, ample flow of water is available on all floors of a house at a given time, equally distributed to the various fixtures in accordance with the needs of those fixtures.

4. *Production:* Tight well platforms and casings, clean grounds and wide separation of the well from probable channels of impure drainage are absolutely necessary.

The Water Itself

Ideally, water should be clear, odorless, colorless, soft, neither too acid nor too alkaline, and there should be enough of it from one source for all domestic purposes. Local water systems usually fulfill these requirements, except perhaps the degree of hardness and the acid and alkaline factors, but even this situation is being remedied by many public water supply companies which treat the water before delivering it. Private water supplies may require water softeners, filters or chemical treatment in order to meet proper standards of purity, pleasantness of taste and harmlessness to the plumbing pipes. (See page 493.)

Water Sources

Water may be obtained from municipal or private water works, mains, from dug, driven and drilled wells, springs, lakes and cisterns. Wherever the source is other than a main, water should be tested before it is used for drinking.

Shallow and deep wells can be tested for their capacity in gallons per minute and hour.

Spring water, if plentiful, is usually pure and cold.

Lake water, while plentiful, may be fairly warm, and also must be watched for varying potability, depending upon the use to which the lake is put. Usually this water is not recommended for drinking purposes.

Cisterns are used when the supply of water is limited and water must be stored in a reservoir.

Rain water, small springs or water from a well of small capacity may be directed to a cistern. Its construction must be such that in no way can there be danger of contamination. The use of cisterns for plumbing fixtures may be undependable since the amount of water at any given time is uncertain.

In each case ask the advice of your local department of sanitation before making provisions for use of private water sources.

Pumping Equipment

Installation of a country water-supply system in all regions beyond the reach of municipal water mains is an intricate problem. It involves a well, properly located and adequate in size for the house it will serve, and usually pumping equipment which will be reliable and easy to care for through a long period of time, and adequate provision for disposal of used or waste water.

The advice of a reliable plumbing contractor, preferably one who has had previous experience with wells and well pumps, and the purchase of reliable equipment are very important.

In making your selection of equipment, remember these points:

1. The source of your water should be over-generous rather than slightly on the scanty side.

2. Choose equipment which can be easily and competently serviced by either a local plumbing contractor or a local representative of the manufacturer.

3. Find out how to care for the equipment and give it the same regular care you give your automobile.

A. *Site:* It is wise to select a site for the well pump which will eliminate long runs of pipe from well to house and, especially with shallow wells, a site removed from the faintest possibility of contamination by the sewage disposal plant. The location also should eliminate noise of the motor from the house itself. Noise elimination may be achieved by placing the pump some ten or twenty feet from the house in its own little well house or woodshed, garage, barn, etc., or by using the kind of pump which operates in the basement with a minimum of sound and vibration.

B. *Size of Equipment:* It is most important to figure the size of your equipment to meet your full water requirements. A minimum of at least twenty-five gallons a day for each member of the family should be figured, more if you use water outside the house for garden or livestock. Try to estimate the total amount of water you will need, not only ordinarily but also at peak load, when you have weekend guests or when laundry is done in the house.

It is a great nuisance to run out of water at crucial moments. The

cheapest well, consisting of a "well point" or shaft with screened holes to admit ground water but strain out sand or dirt, may be driven about 22 feet into sandy soil if there is sufficient ground water available. Be sure the supply is ample before using this kind of well. It is also possible to use a gravity water system—with no pump at all—if a water source higher than your house (*i.e.* on a hill) is available, or if you have what is known as a "flowing" artesian well or one bored down to a depth where the water pressure is so great it forces the water out at the surface. Full knowledge of local conditions is essential to your choice of type of well and equipment.

The amount of water a well will give, the capacity of the pump and the size of the storage or pressure tank all determine the supply of water in a given house. In general, a large capacity pump complete with a standard size pressure tank (approximately 42 gallons) is more efficient than a small capacity pump with a large pressure tank. A small capacity pump has to run longer, hence the cost of operation is more. The size of the tank is not the same as the amount of water at your disposal under hydro-pneumatic pressure. Only two thirds of the tank is full of water—the rest is air.

For a small family, a pump with a capacity of about 250 gallons an hour and a 42-gallon tank are sufficient for ordinary purposes, and conform most generally to the size of the plumbing pipe. Standard pipe in the average house is ½-inch and ¾-inch. Forty pounds is the usual maximum or cut-out pressure; it gradually and automatically reduces as the water is drawn, until the pump cuts in at twenty pounds, the usual starting pressure.

C. *Types of Pumps:* There are three kinds of well pumps in common use in country homes:

1. The shallow-well pump, used with dug or driven wells up to 25 feet depth (cheapest).
2. The jet pump, used with wells over 25 feet deep and up to about 100 feet deep (medium priced).
3. The deep-well pump, used with artesian or drilled wells of any depth and capacity (most expensive).

All types give good service if they are selected properly for the wells with which they must work, and if they are carefully installed.

D. *Installation of Pumps:* The rule for all plumbing work holds here: the equipment is never any better than its installation. Conscientious and competent work is imperative. With a deep-well pump of the plunger type, for instance, the pump must be placed directly over the

well and the water piped into the house by means of the pressure system. This is the kind of pump usually installed outside the house itself. Shallow-well pumps, working on a suction or vacuum system, usually are placed in the cellar and a pipe run to the well. Jet pumps, having no moving parts except the motor, may be placed in basements to draw water from wells outside the house, if the wells are the proper depth for them.

All wells must be properly sealed at the surface, for surface waters may leak back even into below-rock wells, possibly polluting them. The best method is to build a concrete leakproof pump housing or pit, wherever pumps are installed below the surface of the ground, and to have the pipe inside a deep well cased all the way down to solid rock. Be sure, too, that the pump pit is drained, so rain water runs out and not into the well itself.

E. *Piping and Pressure:* Haphazard or thoughtless selection and installation of piping may ruin an otherwise good domestic water system. When water passes through a pipe, a certain amount of friction occurs between the water and the pipe. Pressure is necessary in order to overcome this friction and force the water through the pipe. The piping must be of proper size to create the least possible use of power. For this you need expert technical advice. Most manufacturers of pumping equipment maintain advisory services from which one can get standard recommendations for different-size houses, including advice as to pumps, pipes and storage tanks. These standard recommendations always should be checked by your local contractor against your special requirements and individual layout.

Water Treatment

When the water source has been tested and found pure, and the pumping equipment is in order, there remain certain deficiencies or peculiarities which sometimes require treatment.

1. *Water-softening* systems can be installed by individual householders to counteract hard water (see page 458).

2. *Filters* are devices for removing dirt, sediment and other suspended impurities from water. They are designed to promote purity and safety, but should not be assumed to guarantee these qualities under all circumstances. Filtration does not inevitably affect such dissolved impurities as mineral salts and gases.

Filters may use sand, well-burned wood charcoal, or activated car-

bon. For filtering matter too fine to settle on standing, a device may be used which automatically feeds a small quantity of alum or other coagulent into the pipeline carrying the water to the filter.

Individual faucet filters also are sold for limited use. Simple home-made sand filters can be constructed, having a capacity of 25 to 30 gallons per twenty-four hours, enough for drinking-water purposes. (See Farmers Bulletin 1448, U. S. Department of Agriculture, for instructions.)

3. *Disinfection or chemical treatment* should be considered an emergency measure. While it is true that control of the character of the water is possible by means of expert treatment, the cost rarely justifies the result over a long period of time for the average family. If drinking water is suspected of contamination, stop drinking it until it has been examined by sanitation authorities. If chemical disinfection is advised (usually by means of chloride of lime or tincture of iodine) follow instructions implicitly. Do not continue treatment over too long a period of time, unless it is specifically ordered.

Sewage Disposal

Private waste disposal plants are required in all localities beyond the municipal sewage lines, and must be as carefully planned as water-supply systems. Be sure to get the local Board of Health requirements and do at least as much as is asked for therein. If no Board of Health serves your community, it is well to have an expert in sanitation check your system, even if yours is a modest home, for no expense is too great if it pays in safety.

Unpurified sewage turned loose into a stream, sink hole or on the ground near a house is a menace. Domestic sewage does not contain disease germs at all times, but no one can tell when it does or does not. It can cause typhoid fever or dysentery by getting into the water supply, into a stream used by cows or pets, travelling through underground caverns to a spring or well a long distance away. The sewer line from the house to a septic tank or cesspool must be absolutely tight, so there can be no leakage. A cesspool should be placed as far away from the house as practicable depending on ground conditions, but seldom closer than 50 feet to the well or spring from which drinking water is obtained. A septic tank may be placed as close as 10 to 15 feet from the house, with a long length of tile field for the waste to follow after it leaves the septic tank. If the land slopes, place the tank or cesspool downhill from the well.

In general, if the ground around your house is gravelly and sandy,

you cannot go wrong on standard applications. If clay or sub-surface water conditions are encountered, you may have to allow more distance.

There are three types of standard waste disposal systems, employing:

(*a*) A septic tank and tile field.

(*b*) A cesspool.

(*c*) A septic tank and cesspool.

I. The Septic Tank: The purpose of a septic tank is to separate and hold the solid particles of waste, which will settle to the bottom or float to the surface, in order that the liquid which reaches the tank's outlet will be clear or nearly so. The tank does not purify sewage but merely gets it ready for final disposition. The deposit which collects in the bottom of the tank is called "sludge"; the particles which float to the top are called "scum." Most of the sludge and scum is changed into liquids and gases by bacterial digestion inside the tank. Bacterial digestion of waste takes time; therefore the septic tank must be large enough so it will not fill up with solid matter quickly. If a tank is large it may not need cleaning out for several years.

The septic tank is a watertight tank of metal, tile or concrete. It should never be used to carry off rain water from roofs and gutters, or water from cellars. Newspaper, heavier paper, sticks, rags, rubbish, garbage should never be thrown into water closets and sinks emptying into the tank, as they may stop the pipes or cause the tank to fill up with solid matter too rapidly.

It is wise to have in addition to your septic tank, a *grease trap* to take greasy water from the kitchen sink. Grease prevents digestion of the contents in the septic tank. A *sand trap* to carry away shower and bath water without danger of overtaxing the septic tank is also a good and inexpensive addition to the waste-disposal system.

To figure what size septic tank is required, the general rule is to allow from 50 to 75 gallons for each person in the family. The smallest sized tank usually recommended is 300 gallons. In general, the following table applies:

Number of Persons	*Gallons of Working Capacity*
One to four	325
Five to nine	450
Ten to fourteen	720

But the number of bathrooms in a house makes a difference in figuring sizes, because there is more dilution in the sewage if much bath or shower water is drained to the septic tank, which slows up the waste-

digestion process. This can be offset somewhat immediately after the tank is installed, by the use of a pound or two of powdered yeast or well-decayed vegetable matter or animal manure, which increases the bacterial action in spite of a large volume of water. For homes of two bedrooms and one bath a 300-gallon tank usually suffices; for homes of three bedrooms and one bath play safe with a 500-gallon tank; and if there is more than one bathroom use about a 750-gallon tank.

The outflow from a septic tank is taken care of by means of a purification field or a tile field. The purification field consists of topsoil (the top 20 to 24 inches of earth) containing thousands of bacteria which change organic matter into the kind of food necessary for plants, grass and trees. Draintile is used to carry the outflow from the septic tank's outlet to the topsoil. The object of the draintile is to spread the liquid sewage out through enough ground so that all of it can be absorbed.

The length of the draintile depends on the nature of the soil and the daily amount of sewage to be cared for. Dry, sandy soil will take more sewage than heavy soil such as clay. Any given plot of land absorbs only a given amount of sewage. When the sewage appears at ground surface, or the ground near the draintile becomes soft and soggy, the chances are that the saturation point is near. If in doubt about the soil, an expert can make a simple soil test to estimate the porosity of the soil.

The first four joints of draintile to the purification field should be of glazed tile, firmly cemented at the joints. The rest of the joints, of ordinary unglazed draintile, are left open to allow sewage to seep into the soil. Sometimes a four-inch terra-cotta cemented feed line from the tank to a distribution box, from which run a number of draintile lines, is used. Try not to have any planting above the drain tile, as roots frequently become entangled in the open joints and even fill the tile.

The tile field method often is used in conjunction with septic tank. It consists of trenches into which hollow open-jointed tile, covered with metal bands or roofing paper strips, and crushed stone or cinders are placed over and under the tile. There must be several rows of trenches, depending upon the absorption qualities of the soil. Tile fields located on the sides of hills must be planned with care so the flow is not too great to allow for seepage into the soil. Tile must be located fairly near the surface, however—not more than eighteen inches or two feet down, for air must be provided to help bacterial action. A very gentle pitch of the tile is desirable, so the waste material does not rush to the end of the field and pile up.

II. Cesspools: The purpose of a cesspool is approximately the same

as the septic tank and the tile field except that usually it does not have an outlet other than natural ground seepage; thus there is the possibility of clogging with grease. Periodic chemical treatment before trouble develops will prolong the life of a cesspool, but care must be taken not to introduce any chemical which will harm natural bacterial action. Cesspools ordinarily are made of masonry—hollow concrete block or stones with open joints. Liquid sewage flows through the walls of the cesspool and also through its bottom, which is the earth itself. A cesspool usually is at least five feet deep, measuring from the inlet of the enclosure, but in some instances it is necessary to go deeper to reach sand or gravel strata. A cesspool always requires more frequent cleaning than a septic tank, since fats and solids are not always completely dissolved before the liquid sewage runs out of the cesspool, and the fatty substances permeating the cesspool eventually form a barrier for the running off of sewage. A grease trap between kitchen sink and tank would partially take care of this, however.

The top of the cesspool should be lower than the lowest plumbing lines in the house. Figure about ¼ inch per foot of distance travelled from house to cesspool. If the land slopes down toward the cesspool, less digging normally is required than with level or nearly level land.

Most health departments require the bottom of a cesspool to be at least 2 feet above the ground water table. This means that cesspools should not be used where the ground water comes to within 10 feet of the surface at its highest point.

If cesspools run large, it may be advisable to have two of them, connected with tight sewer pipes. In the case of two cesspools, the first one tends to fill up and become airtight, like a septic tank, while the second cesspool receives the liquids without most of the solids and therefore the liquids here permeate the ground and are disposed or more readily. Cesspools should be at least fifteen feet apart between the walls, located in good permeable soil, without surface water.

Some form of disposal field may be necessary with one cesspool, if it is located in hardpan or any other slow permeating soil.

III. Septic Tank and Cesspool: This system has a septic tank to take the sewage first, plus a cesspool to which the liquid runs after it leaves the septic tank. It is a particularly good system where a small lot area does not allow a large disposal field, and where soil is better at low levels.

TELEPHONES

Planning for telephone service in the home before it is built has the decided advantage of making possible one, two or more telephones

without any exposed wires on baseboards or mouldings. It is possible to locate telephones properly for convenient, quick use at very little expense, when walls are not complete. Conduits of ordinary half-inch pipe, through which the telephone wires go, are installed before insulation, fire-stops and other modern wall-building materials are put in place, with nothing but a neat metal plate on the wall near the telephone to consider in the decorative scheme.

The estimated cost of providing and installing conduit in a six-room, two-story house during construction is about $10. This includes from 20 to 25 feet of conduit and its installation inside the walls so as to provide for concealed wiring for a main telephone connection downstairs and two telephone locations upstairs either for permanent or portable extension telephones. When ready for occupancy the telephone company provides the required wiring and connects the telephone, at a cost varying with the locality.

Installation of telephone service in an existing house is neither as efficient nor as easy to estimate for costs. It is not practicable to install conduit behind baseboards or mouldings. Wires must be fished up through the walls from the basement. This is not so difficult if there are no obstructions, but obstructions frequently are encountered in old houses. Then the wires must be run on the outside of partition walls all the way from basement to first and second floors.

Therefore, if you are building or remodelling a house it is well to think of telephone wiring when the walls are being made or torn apart, and to make the telephone installation as permanent a part of your home as the electric and gas lines.

The telephone companies maintain architects' and builders' services, which assist without charge in planning for telephone conduits. Typical telephone conduit layouts consist of:

1. For small or medium homes (5 to 7 rooms)

   (*a*) A short run of pipe from basement to a centrally located outlet on the second floor.

   (*b*) An extension of this pipe into the open attic to permit wires to be dropped into second-floor walls to desired telephone locations.

   (*c*) A short pipe extension from the basement pipe—under the floor of the finished part of basement—for kitchen, playroom or laundry extension telephone.

2. For larger homes (8 to 10 rooms)

   (*a*) A pipe from the basement to a centrally located point on the second floor for upstairs telephones.

(*b*) A second pipe running from basement to second floor to insure concealed wires when more than one second floor telephone is desired.

(*c*) A short pipe for the first floor, running from basement.

(*d*) Extension of this short pipe along the basement ceiling, if the basement is finished as a game room.

I. Location of Telephones: Since conduits for concealed telephone wires provide convenient locations not only for the main telephone but also for the extension telephones, additional instruments may easily be installed. Calls can be made and answered from extension telephones without extra steps to the main telephone. A bell can be provided with each extension telephone, but switches may be installed to turn off the extension bell when, for instance, some one is sleeping near a bedroom extension telephone.

It is not necessary to have a permanent telephone located in a room where there is only a part-time need for an instrument. You can have a portable telephone instead. Outlets can be installed, for instance, in two adjoining rooms and one portable telephone used first in one room and then in the other. The portable instrument is plugged in like an electric lamp. There is an installation charge for the portable telephones, and the monthly rental charge is the same as for an extension telephone.

In the small home a telephone on the first floor is usually placed in the hallway or foyer or in the living room. About three feet of half-inch conduit running within the wall from the basement to a bell box cabinet above the baseboard is all that is necessary for concealing the wires.

Another convenient place for the telephone on the first floor is in the kitchen or pantry, where many housewives spend at least half their working hours. It should be considered an extra telephone outlet, in most cases, however, for if it is used as an alternate to the foyer or hallway telephone other members of the family will have to traipse out to the kitchen each time they make calls.

The most popular location for the second-floor telephone is the bedroom, adjacent to the bed. This requires about 15 feet of half-inch conduit from the basement, to keep wires entirely out of sight. Two adjacent bedrooms, however, can be served from the same conduit.

Where walls of solid material prevent the installation of the riser pipe to the bedroom, an alternative is the second floor hall.

Things to Think About When Locating Telephones

1. Analyze your day to determine when you use the telephone most frequently, and put it where you can save steps at those times.
2. Provide for privacy while talking on the telephone, considering business calls, young folks' "private" conversations, party arrangements made in the presence of guests, etc.
3. Place the telephone where its bell will not disturb children, invalids or daytime sleepers; if possible have the bell adjusted to soften its tone, or have a switch installed to cut off the bell when it is not wanted.
4. Make some provision for future expansion of telephone service so that you can add extensions or portable telephone outlets in rooms, say, in a still unfinished attic.

II. Types of Telephones: There is telephone equipment to meet every need:

1. *The hand telephone,* sometimes called the French phone, which has transmitter and receiver all in one piece, held in a cradle supported by a base-with-dial.
2. *The hand telephone, hang-up type,* same as 1, except that the dial is mounted atop a small box and the receiver-transmitter hangs on one side of the box. For use where no table is available or where it is desirable to keep the desk clear.
3. *The desk telephone,* which is the familiar upright telephone for desk or shelf use, has the transmitter mounted on a metal column, the receiver hung at one side and the dial on the base.
4. *The wall telephone,* consisting of a box with dial and transmitter mounted on its face, the receiver hung on one side. For use especially in kitchens and pantries.
5. *The outdoor telephone,* a hand telephone in a weather-proof cabinet, especially designed for use at exposed locations, such as swimming pools, tennis courts, bathhouses, terraces and gardens.

III. Special Equipment: Various additional conveniences are available. There are several types of plans that can be adapted to individual needs, to provide

(*a*) Answering or making calls at one telephone over two or more lines to the central office;

(*b*) Holding a call while answering or making another call at the same phone;

(*c*) Cut-offs to insure privacy when talking, and

(*d*) Special signalling devices to call to the telephone the person wanted.

(*e*) *Intercommunicating* telephones within the home provide connections between two or more telephones on the same premises, buzzer circuits usually being used for signalling purposes. No switchboard or special attendance is required, although it is necessary to provide space for larger cabinets containing the equipment.

(*f*) For still more extensive homes there is a dial private branch exchange permitting direct dialing between interior telephones and between any one of these and the central office.

(*g*) *Special intercommunicating telephones,* not connected with the outside telephone service at all, may be purchased inexpensively for use between a master station and one or more remote stations. These are the sort commonly used by executives whose assistants occupy separate offices, and are a boon in a busy household where the kitchen is some distance from bedrooms, library, etc.

(*h*) *Additional lines* may be installed if a house has a great many incoming or outgoing calls causing delay in use of telephone service. Additional lines, like original ones, may or may not be listed in the telephone directory, as you wish. But where consecutive numbers are provided, when the main line is in use the calls for the main number are automatically connected to the succeeding consecutively numbered lines.

(*i*) *Telephones for the hard of hearing* are available. They consist of an ordinary instrument with which is associated a small amplifier containing a vacuum tube similar to those in the radio. The voice coming over the line passes through the amplifier and is made loud enough for persons with impaired hearing to hear clearly. A switch enables the user to regulate the volume or cut out the amplifier altogether, if a person with normal hearing is using the telephone. The telephone bell can be adjusted to one of several pitches and tones best suiting the person with impaired hearing, and bells which actuate a switching mechanism that turns on lights as a signal the telephone is ringing also are possible.

IV. Use of the Telephone: Telephone shopping is perhaps the most important business use made of home telephones. Its advantages are

many, chief among them the time saved in travelling to and from the stores; convenience in all sorts of weather; earlier placement of orders and quicker delivery; saving of carfare for suburban shoppers; avoidance of crowds.

When shopping by telephone here are a few points to keep in mind:

1. Know exactly what you want before placing call, and give all the details of your order explicitly and completely.
2. Shop by telephone at stores that invite telephone shopping, as their service is likely to be better.
3. Ask the operator at a large store for the merchandise you want rather than the department in which you believe it is sold. Many stores have "personal shoppers" handling all kinds of merchandise. You get quicker results by saying, "I want to order a pair of suede gloves" than by asking for the glove department, since suedes may be sold in a division with a telephone extension other than the main glove department.
4. Speak directly into the mouthpiece of the telephone, with lips about half an inch away, especially when giving name and address.

Some Hints on Saving Time in Use of the Telephone

1. Don't trust to memory when calling numbers; consult the directory.
2. Keep a handy list of telephone numbers frequently called.
3. Note the dial number of Information and Long Distance, so you can call either one quickly.
4. Familiarize yourself with instructions on how to make emergency calls (Fire, Police, Ambulance) which always appear in the front pages of the telephone directory.
5. Whenever you leave word for some one to telephone you, leave your telephone number also.
6. Announce yourself promptly wherever you call, especially to some one who will not recognize your voice at once.

CHAPTER XXIX

LIGHTING

A fingertip on a switch—and a room is flooded with light. No wonder we accept artificial light with no more thought than we give to daylight. It is there, ready to serve us, twenty-four hours a day. Only when a severe storm cuts off our supply of electricity and forces us for a time to resort to more primitive lighting, do we realize how much our comfort and efficiency depend on light.

We have enjoyed electric lighting for many years, and for almost as many we have misapplied it! As long as we could see well enough, as we thought, to read or write or sew, we were satisfied. Meanwhile, what was happening to our eyesight? Among 1000 persons 29 per cent had defective vision when they were twenty years old, and nearly 50 per cent when they were fifty! These facts are significant since it is known that inadequate or improper lighting results in eyestrain.

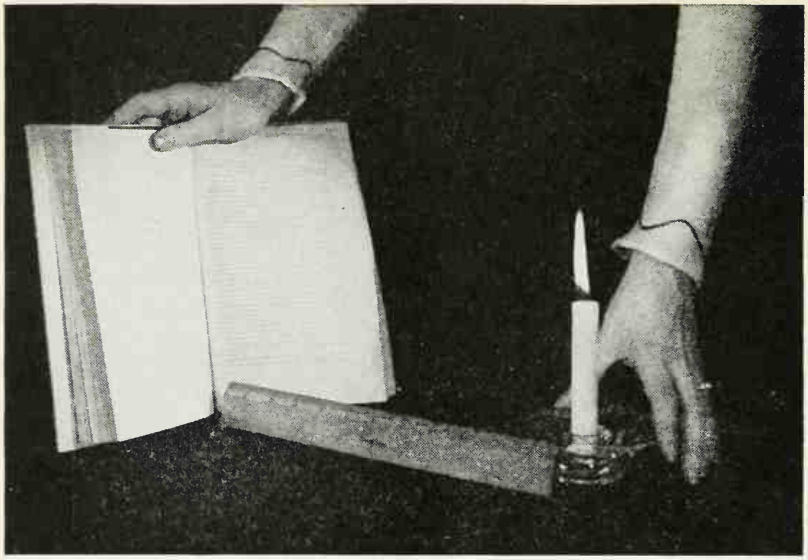
During the past decade scientists have delved deeply into the study of light and its relationship to sight. With intricate apparatus and delicate instruments they have discovered many facts of vital concern to us. They have found, for example, that when light is inadequate the strain and effort of seeing are reflected throughout the body as well as in the eyes. They found, too, that the amount of light, while extremely important, is not the only important factor. The *quality* of the light, the way in which it is *distributed,* is also an important factor in seeing.

Now, as a result of long and costly research, these scientists can tell us how much light we need, how light can be diffused or softened, and how the handicaps of harsh contrasts of light and shadow can be avoided. Here are their three requirements for good lighting:

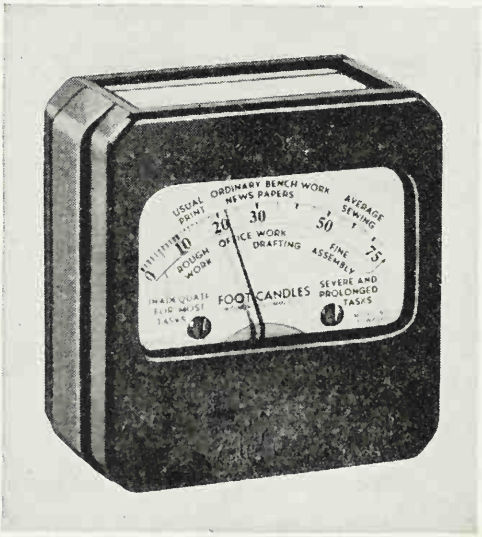
1. Enough light for clear, easy vision.
2. Absence of glare.
3. A practical combination of general lighting and local illumination.

How Much Light Is Desirable?

Quantity of light can be measured. An ingenious little instrument called a light meter measures light as readily as a yardstick measures



A "footcandle" is the unit used in measuring light. This unit is based on the amount of light falling upon a surface one foot away from the flame of a standard candle.



The light meter measures intensity of light in "footcandles."

cloth. But instead of a yard, the unit of measurement is a "footcandle." This unit is based on the amount of light falling upon a surface one foot away from the flame of a standard candle, or approximately that from an ordinary candle.

After hundreds of years of living and working indoors, man's eyes are still outdoor eyes. In full sunlight the light meter will register nearly 10,000footcandles. On a porch, the meter reading is often several hundred or more footcandles. In a shady spot, the level of illumination may be 1000 to 1500 footcandles. And in the house, beside an open window the level of illumination may be 100 to 400 footcandles. Nature is lavish with light. But after a day of continuous visual work, we are apt to read or sew all evening by the light of a 40-watt bulb in an ordinary bridge lamp which may throw as little as 5 footcandles of light on our work! No wonder our vision suffers at an early age. Indoors there is little chance of obtaining "too much light." Too much *glare* is another story and we'll get to it later on. Meanwhile, here are the minimum light requirements for reasonably good eyes—figures that are the result of years of research and experience in the field of seeing. Defective eyes may require considerably more light than the amount given in the table—but that is a matter for your eyesight specialist to determine.

Recommended Lighting Levels for the Home

(Approved by the Illuminating Engineering Society)

	Footcandles
Reading	
Prolonged periods with fine type	20– 50
Ordinary reading	10– 20
Sewing	
Fine needlework on dark goods	100 or more
Prolonged average sewing	50–100
Prolonged sewing on light goods	20– 50
Ordinary sewing on light goods	10– 20
Writing (ordinary)	10– 20
Card playing	5– 10
Children's study table	20– 50
Dining room (when used for ordinary reading or writing)	10– 20

	Footcandles
Kitchen	
General	5– 10
Local at work counters and sink	10– 20
Bedroom	
General	2– 5
Bed light	10– 20
Dresser, vanity and dressing-table mirrors	10– 30
Sewing machine	20– 50
Bathroom mirror	10– 30
Children's playroom	
General	5– 10
Local	10– 20
Stairways and stair landings	2– 5
Workbench	10– 30
Ironing machine, ironing board and laundry trays	10– 20

Remember that distance decreases the number of footcandles. At a certain distance from a good reading lamp the meter may register 40 footcandles. At a point twice as far away the light decreases to about 25 footcandles. Therefore it is important to have enough good lamps—one for each chair, table or desk where close seeing is done.

Wouldn't it be worth while to check your present lighting with a light meter? You don't have to buy one—the local electric company will gladly send a representative to your home to take readings, at no cost to you. And unless your lighting arrangement is most ususual, be prepared for a surprise when you see the actual readings!

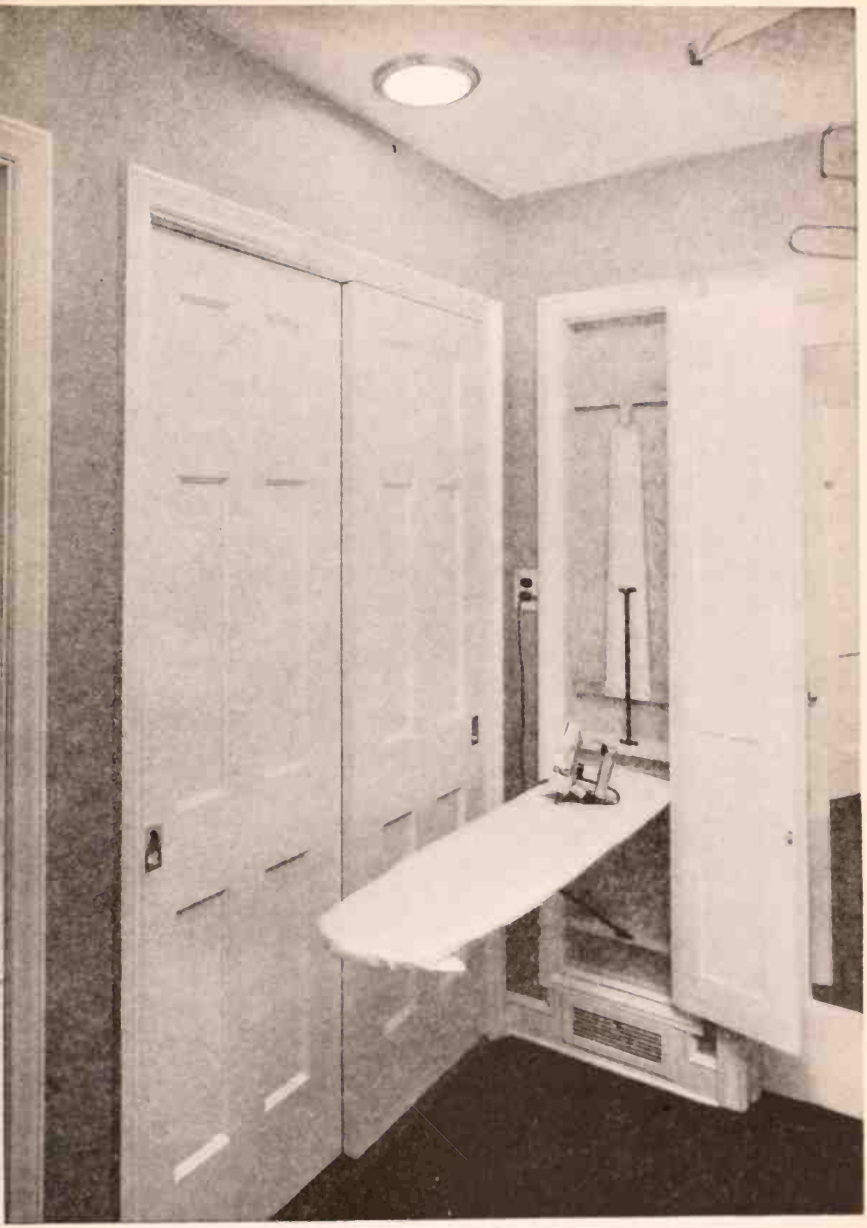
Glare Is Trying to the Eyes

And on the "nerves," too. Experiments have shown that nervous tension increases in the presence of glare.

Light must be filtered or diffused in order to eliminate glare. Diffused light is soft and soft light is restful to the eyes. If light is filtered through fabric or a special type of glass or plastic, it is softened. Light reflected from the ceiling is also softened and diffused.

Harsh Contrasts in a Room are Unpleasant and Uncomfortable

One or two pools of light in a dark room may seem to provide adequate illumination for close work but seeing may be fatiguing under



A ceiling fixture above the ironing board casts unshadowed diffused light on the work.

such conditions. Whenever the worker looks out into the room, the pupils of the eyes, for example, have to adjust radically to the difference in amount of light. When he looks back at his work, another adjustment occurs. Furthermore, dark surroundings are distracting, in any case.

Thus the third requirement of good lighting is good general illumination in addition to local illumination. The rule is to have the general illumination at least 1/10 the amount of local illumination. The light meter will tell the story.

Light Conditioning

This is a new term that will soon have as familiar and important a meaning as the term "air conditioning." "Light conditioning," as applied to a home, might be explained as the right amount of light, the right kind of light and the right distribution of light made available for all "seeing" needs.

The first step in achieving light conditioning is to provide good *general illumination* in every room. Ceiling fixtures are the most common means of obtaining this type of lighting. If the ceiling is low, the fixture should be shallow and close-fitting. If the ceiling is high, a hanging fixture is suitable. Ceiling fixtures, lamps and wall brackets which direct all the illumination toward the upper walls and ceiling are classified under *totally* indirect lighting, while those which emit a greater proportion of upward with some downward light are known as *semi-indirect* types. Some ceiling fixtures produce totally indirect light by using a metal reflector which throws the light upward. A white or near-white ceiling reflects the light downward, thus providing "indirect" illumination. Other ceiling fixtures throw part of the light to the ceiling and diffuse part of it through dense glass or other diffusing material at the bottom. This type of fixture is called "semi-indirect." Wall urns faced with dense glass provide semi-indirect light, while all-metal wall urns give totally indirect light. *Reflector-type lamps* such as the *torchière* or floor or table urns also provide semi-indirect or totally indirect light for general illumination.

Cove lighting, successfully used for indirect lighting in public buildings, may be adapted for use in homes. Continuous coves, applied to the four sides of a room, are appropriate in a large room with a high ceiling, where there is ample space (20 inches or more) between the cove and ceiling to allow even lighting distribution over it. *Cove sections* may be fitted to door and window openings and placed in wall areas. If the door and window openings on opposite walls are reason-

ably balanced, this type of general lighting may be interesting and pleasing.

Two things are tabooed in illumination for general use in a room—unshaded bulbs and colored or tinted bulbs. Bare bulbs cause unpleasant and even annoying glare and tinted bulbs distort colors used in the room and cut down light substantially.

After the problem of general illumination has been solved, the next problem is that of providing *local* lighting. Lamps are usually the answer—well-designed lamps, of course, and plenty of them.

Too many of us look upon lamps as purely decorative objects that obligingly give off light! For the sake of better "seeing" it is time that we learned to distinguish a good lamp from a poor one. Here are some of the characteristics of a good lamp:

1. It should spread light over a wide circle. To do this successfully the base of the lamp must be tall and the shade flared at the bottom.
2. It must have a shade that reflects light efficiently, because reflection increases the amount of useful light beneath a lamp. Thus the lining of the shade should be white or near white, because dark linings absorb light instead of reflecting it.
3. Its shade should be open at the top, so that some light is directed upward. This improves general illumination by lessening harsh contrasts of light and shadow.
4. It should give diffused light. To do this, the bulb may be housed in a diffusing bowl made of glass or plastic.
5. It must not create a bright spot akin to glare. Therefore the *outside* of the shade must be dense enough so that not much light shows through, and the shade itself must be deep enough to conceal the bulbs or the diffusing bowl.
6. It should not wobble or tip.
7. It should be mechanically sound.
8. It should be electrically safe.

It's easy to find out whether a lamp will wobble or tip, and to see whether the shade has a white lining, but how can we be sure that it will give off enough properly diffused light, or that it is mechanically sound and electrically safe?

Thanks to a group of illuminating engineers known as the Illuminating Engineering Society, the selection of a good lamp is no longer a chore. All that is necessary is to look for the "I. E. S." tag. Any lamp that is qualified to bear this tag has met the specifications set up by the

Illuminating Engineering Society. It has passed twenty-nine tests for good construction, fourteen tests for electrical perfection, and eleven tests for sight-saving light.

Every "I. E. S." lamp has three characteristics:

1. It is equipped with a diffusing or light-directing bowl of glass or plastic that directs part of the light upward for general illumination, and softens and diffuses the downward light.
2. Recommendations are made for the right-sized bulb to use in each lamp. This information is given on the tag.
3. It is provided with a shade which is correctly proportioned, and lined with material which is light in color.

There are ten *types* of I. E. S. lamps and each type is made in many different *styles,* so that it is easy to select a good lamp that will fit any decorative scheme. The ten types embrace the following models:

1. Study and reading lamp.
2. Junior floor model.
3. Regulation floor model without candles.
4. Regulation floor model with candles.
5. Bridge model.
6. Swivel-arm floor model.
7. End table lamp (23-inch)
8. Portable wall model.
9. Indirect torchière.
10. End table lamp (19-inch).

When the budget says you can have a *new* lamp, look for the "I. E. S." tag before you buy. Meanwhile, invest a few cents in improving the lamps you already have. Bridge lamps are usually the worst offenders against eyesight, and many of them are in use. Here are some inexpensive ways to remodel them:

1. *Down-turned bridge lamp:* Buy a white-lined shade with a white metal top and use a 100-watt silvered bowl lamp which will screw into the present socket. Another method is to use a shade with a plastic bowl suspended within it, covering the bulb, which softens the light and protects the eyes. This shade will also screw into the present socket. Use 100-watt bulb.
2. *Upturned bridge lamp:* Buy a plastic diffuser which fits on the socket and which softens the light and spares the eyes. Use a 10 to 12-inch shade with a white lining and a 75 or 100-watt bulb.

3. *Bridge lamp into floor lamp:* Have the bridge arm removed. Equip the base with a convertible top, a glass or plastic diffusing bowl and a light-lined 18-inch shade. Converter tops are available in two

An I. E. S. study lamp sheds diffused light of correct intensity on "home work," protecting eyes from strain and glare.

sizes. These tops also provide a means of remodelling old two-socket table and floor lamps.

Inefficient floor and table lamps can be made to serve you better if they are equipped with diffusing bowls and white-lined shades that are open at the top and flared at the bottom.

Equip lamps with bulbs of high enough wattage to supply the necessary number of footcandles (page 505).

Some Dos and Don'ts

Whenever possible, place lamps so that light falls *over the shoulder* and not in the eyes of the person who is reading or doing other close seeing work. Desk lamps should be placed to the left of right-handed persons and to the right of left-handed persons. In this way, reflected glare is eliminated. The bulb should not be visible.

Remember that distance cuts down light tremendously, and when possible place lamps so that they are near the user.

Provide enough lamps of the right kind so that every one will have enough comfortable light for work or play.

Fixtures that use a single bulb rather than several are more efficient. One 200-watt bulb gives more than 40 per cent more light than five 40-watt bulbs.

Select fixtures that conceal the bulb. When candle-type fixtures are used shade every bulb.

Keep bulbs, diffusing bowls, etc., clean (page 197). A film of dirt may waste as much or more than 20 per cent of the light you are paying for.

Good Lighting—Room by Room

Entrance Hall

1. Ceiling fixture.
2. One or more table or floor lamps or torchières.

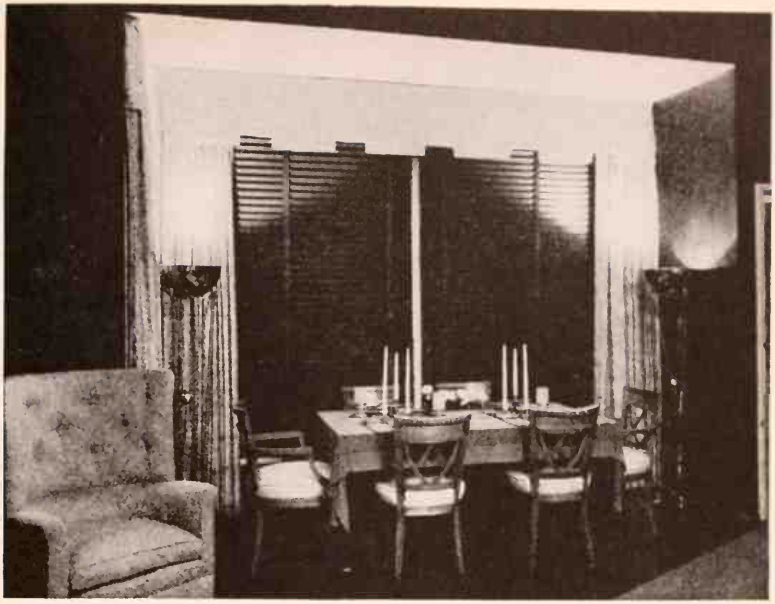
Living Room

1. One or more ceiling fixtures, depending on size of room.
2. Shaded wall brackets or urns.
3. A floor or table lamp for each furniture group, chair, table or desk ("I. E. S." lamps preferred).
4. Decorative built-in lighting (page 516) if desired.
5. Convenience outlets spaced so that each lamp may be connected by a *short* cord (page 90).

Dining Room

1. Ceiling fixture

   (*a*) Semi-indirect shaded fixtures for dining-room lighting are available in many styles.



Top: Torchières provide indirect lighting in this dining alcove.
Bottom: Good lighting in a bedroom.

(*b*) Candelabra fixtures are potential sources of glare unless the bulbs are individually shaded.

(*c*) A built-in light panel, flush with the ceiling, is a novel innovation but should never be installed as the primary lighting in the room. A new type has a tiny opening through which a spotlight is focused on the table. This spotlight can be adjusted to provide several decorative effects or, if candles are used on the table, can be turned off and only the panel lighting used. It requires special consideration as to installation—a trap door in the room above or a removable plate in the ceiling for relamping.

2. Wall urns, table urns on the buffet, or built-in effects (page 516) around windows, in china cabinets and over doors may be used effectively to supplement the general lighting.

Breakfast Room

Ceiling fixture directly over the table.

Halls and Passageways

One ceiling unit for each 15 feet.

Bedrooms

1. Ceiling fixture providing a soft, well-diffused light.
2. Pair of lamps for dressing table.
3. "I. E. S." reading lamp (table, floor or pin-up model) for each bed.
4. Other lamps for desk, chair, chaise longue, as needed.

Children's Rooms

1. Ceiling fixture, as in bedrooms.
2. "I. E. S." reading lamp for each table or desk.
3. Convenience outlets for bottle warmer or room heater.
4. Switch near bed to enable a small child to turn on light at night.

Bathrooms

1. Ceiling fixture of white opal glass.
2. Twin bracket fixtures, one on each side of mirror.
3. Moisture-proof unit for shower stall.

Closets

One light outlet for each closet. Automatic door switch preferred in large closets.

Good lighting in the kitchen is essential. General lighting is provided by the ceiling fixture, and every working surface is illuminated by built-in lighting fixtures. Note the panel above the sink.

Unfinished Attic

1. Ceiling unit controlled by pilot light switch at bottom of stairs.
2. Convenience outlet and extension lamp.

Basement

1. Ceiling fixtures with 100-watt bulbs for general illumination. One light outlet controlled by 3-way switch at head of stairs and also in basement, and a pilot light switch on the first floor, to remind you to turn out the light when you come upstairs.
2. Additional light outlets in furnace room, etc.

Note: Kitchen and *Laundry* lighting problems are discussed on pages 28–29 and 43.

Built-in Lighting Effects

Built-in lighting is both decorative and useful. Panels of light above and at the sides of bookcases, corner cupboards and china closets bring out the beauty of rich bindings and colorful patterns and make it easy to locate the book or the dish that is wanted. Beautiful oil paintings can be lighted so that they are always displayed to best advantage, and built-in lighting is the secret of a sun-lit effect around windows.

All this, of course, is frosting on the cake, to be undertaken only after adequate general lighting and local lighting have been achieved. But after all—frosting is good!

SECTION NINE

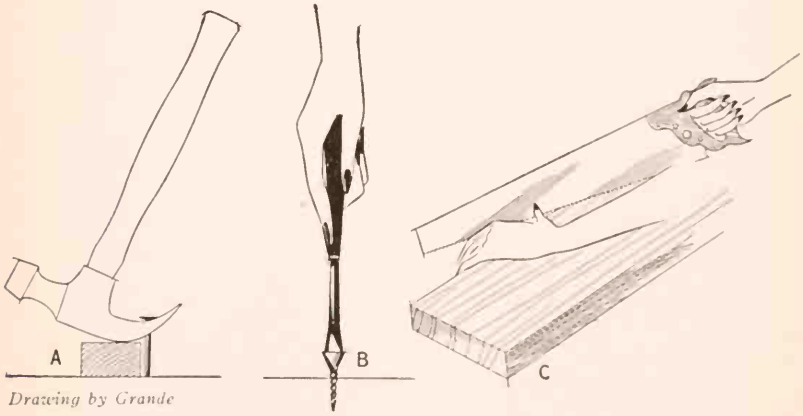
Repairs the Amateur Can Make

CHAPTER XXX

TOOLS FOR TINKERING

The old joke about the hairpin as an all-purpose tool with which any woman could make all necessary repairs around the house no longer has much point. The hairpin is almost extinct, and the "bobby pin" of today is not as adaptable!

All joking aside, a tool kit is an absolute necessity in the smallest



Drawing by Grande

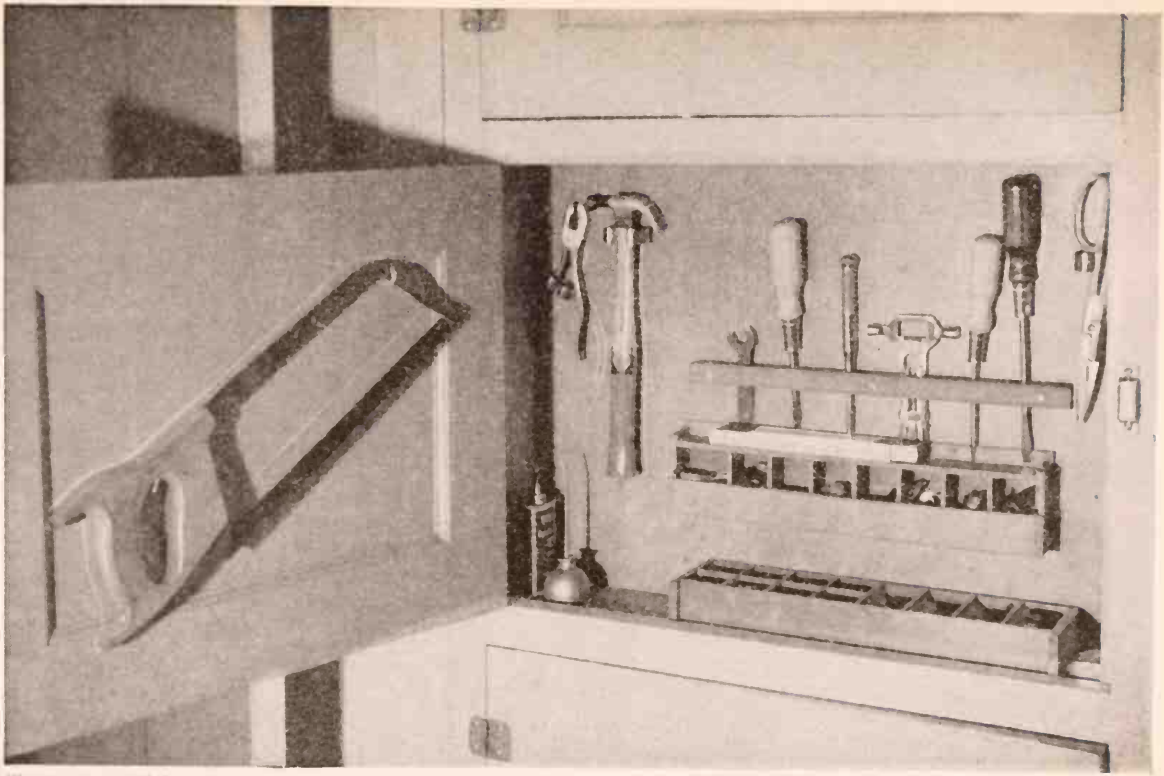
A. When pulling out a nail, place a block under the head of the hammer as soon as the nail comes out far enough to make leverage possible.

B. Hold the top of a screwdriver handle in the hollow of the hand and steady with the forefinger pointed in the direction the blade is to take.

C. Hold a saw with one hand grasping the handle while the other grasps the material and, with the thumb, steadies and guides the blade.

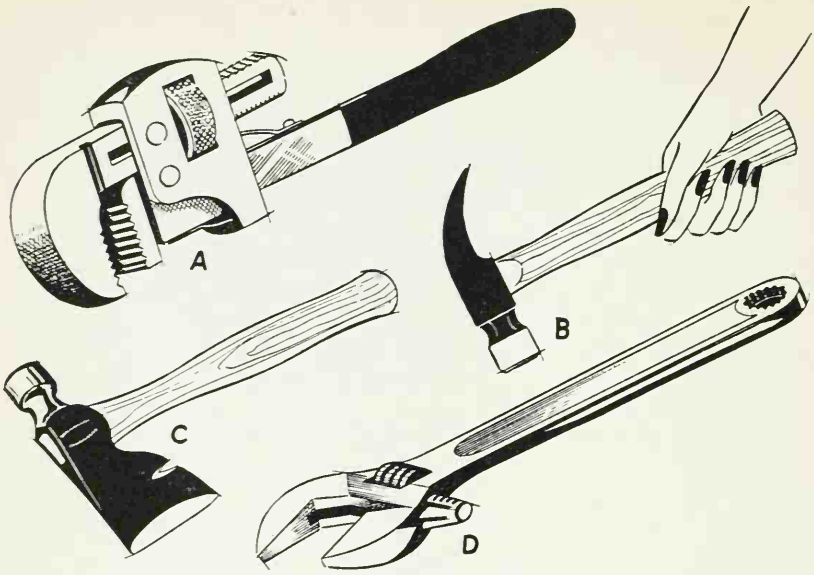
Photograph by William H. Zerbe

If the man of the house enjoys tinkering, he should have a well equipped work bench where he may pursue his hobby.



Photograph by William H. Zerbe

Necessary tools can be stored compactly in a small space. Outlines of the tools, painted on the wall, assure their being replaced correctly after use.



Drawing by Grandc

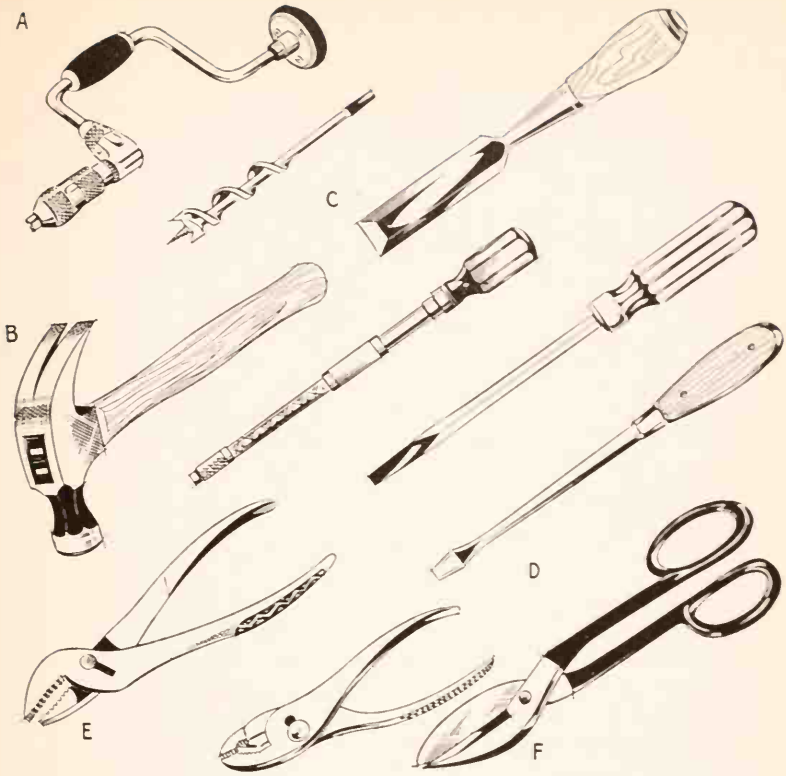
A. Heavy wrench.
B. Grasp a hammer at the end of the handle away from the head.
C. A hatchet is convenient for rough work like opening packing cases and splitting kindling for the fireplace.
D. Adjustable wrench for use on small nuts.

apartment, and it may well grow into a sizable work shop if the man of the house is interested in tools and their uses.

A well-designed tool cabinet, where tools can be properly and conveniently stored, need not take up much space. A convenient cabinet of this type is illustrated on page 519. A work bench, about six feet long and three and one-half feet wide, installed in the garage, attic or basement, is a delight to any one who enjoys tinkering. The more of a hobby it is, the more elaborate the work bench can be.

Good tools are a good investment and it is wise to buy the best, because the list of tools that are essential is not long or complicated and the total cost is not staggering.

There are always odd jobs to be done, even in the most smoothly run house. Things wear out, come loose, need refinishing. More often than not these jobs are easy enough for the amateur to attempt, if proper tools are available. And you will find that there is a subtle satisfaction in working with tools, creating order out of chaos and adding to the comfort of the household.



Drawing by Grance

Frequently used tools.

A. The bit-brace and bit. The one shown has a ratchet arrangement which can be set to keep the blade rigid, to send the bit downward or to reverse and bring it up.

B. A good, well balanced hammer.

C. A chisel.

D. Screwdrivers. A ratchet handle for a screwdriver blade is shown here. When it is used, an up and down motion of the handle operates to drive the screw home and no turning is necessary. The other two drawings are examples of screwdrivers available everywhere. One has a composition handle molded around the shaft and the other has a shaft with one end broadened, flattened and grooved.

E. Tooled handles on pliers provide a better grip. Adjustable pliers, wire-cutting pliers.

F. Tinner's snips cut sheet metal.

Claw Hammer	16-ounce head	Driving nails. Removing nails. Opening crates, etc.	Grasp the handle near the end. Use free arm movement, not just wrist muscles. To draw out nails, catch the nail head in the slotted section. Wiggle the nail back and forth while pulling firmly.	*Rub wooden handle occasionally with linseed oil. (Protect head from contact with oil.) Keep in dry place to prevent rusting. Sandpaper face occasionally to prevent hammer slipping. Keep face level and true. Tighten handle in head as it dries out and becomes loose.*
Large Screwdriver	6–8-inch hardened steel blade	To insert or remove large screws. Not to be used for a chisel, for such use will break handle.	Start hole first with awl or nail that has smaller diameter than the screw. Dip screw point in soap or paraffin. Grip screwdriver handle in palm of hand, forefinger along blade. Do not slant blade or screw will go in crooked. Turn screw clockwise to insert, counter-clockwise to remove. If screw fails to turn when being removed, give it a slight turn in the opposite direction to loosen whatever is binding it.	*Same as hammer.* *Can be reground when necessary, either on emery wheel or with a file.*
Small Screwdriver	3–4-inch hardened steel blade	To insert or remove small screws.	Same as above.	*Same as above.*
Slip-joint Pliers with wire cutter	6–8 inches	Hand-vise to hold nuts in place or to tighten small nuts. Snipping wire. Cutting nails.		*Keep pin oiled, not jaws.*
Monkey Wrench	8 inches. Chilled steel jaws	Loosening or tightening nuts.	Adjust jaws to the size nut being used. Turn clockwise to tighten, counter-clockwise to loosen.	*Oil moving parts, not jaws.*

Essential Tools for Every Home—(*continued*)

Name	Description	Uses	How to Use	Care and Maintenance
Brad Awl	Looks like an ice pick except point has small chisel edge.	To make preliminary holes for nails and screws so wood will not split, and screws will be more easily driven.	Use a half rotary motion, forward and then back, pushing on handle to force awl into wood, until hole is slightly smaller than nail or screw.	None except to keep small edge sharp and shaft free from rust. Use file for sharpening.
Three-cornered File	About 8–10 inches long	For filing off rough edges or smoothing a piece of metal. Also for sharpening saws.	Use pressure on forward motion only. Lift off piece on return stroke to avoid dulling.	Keep free from rust.
Cross-cut Saw	8-point (8 teeth per inch)	To cut across grain of wood	Draw line to mark direction of cut. Draw saw back lightly. Allow for thickness of saw in deciding to saw inside or outside of line. Hold with one hand so thumb and index finger rest on side of handle. Point with index finger in direction cut is to take. Start with an up cut. Keep thumb of other hand at side of saw where line for cut has been drawn, to steady the blade. Move arm back and forth freely, from shoulder. Keep body from swaying too hard. Never force saw by pushing. Use pressure on down stroke only, and follow the line.	When sharpening is necessary, go to a carpenter or cabinet maker's shop. This applies to all saws, except the ones that cannot be sharpened, *i.e.*, coping and hacksaw blades.
Folding Rule	6-foot	For exact measurements in all carpentry, picture hanging, etc.	Make sure rule is opened all the way.	Oil joints occasionally.
Small Oil Can	Flexible spout	For oiling motors,	Turn upside down with spout on object.	Keep full of light machine oil.

Essential Tools for Every Home—(*continued*)

Name	Description	Uses	How to Use	Care and Maintenance
Jackknife	2 blades — large and small. (Sometimes equipped with corkscrew and screwdriver.)	Cutting. Shaving wood. Whittling.		Sharpen blades on oil stone.
Rubber Force Pump		For stopped-up sink drains.	Plunge up and down over drain with small amount of water (an inch or two) in sink, until stoppage is forced through. Otherwise call a plumber.	Flush with clear water after using.
Nails	Finishing nails Common nails	Heads scarcely bigger than shafts. Wide flat heads. Both kinds in assorted lengths from 1–2½ inches.	Use only nails that are perfectly straight and rust-free. To nail boxes, drive nails in at a slight angle. Vary direction for added strength. To drive nails into hard wood, grease or soap ends of nails and drive in with quick light taps. Use awl first. To drive nails into splintery, unplaned boards, prepare holes first with an awl. To nail a yielding surface, have an assistant hold a weight behind it.	Have a box with compartments for each size and keep them separated. A handle on the box allows easy carrying.
Screws	Flat-headed Round-headed Both in brass or iron.	If screw is to be concealed. Decorative purposes where head shows.	See Screwdriver.	Same as nails. Keep in individual boxes according to type, size and head shape.

Name	Description	Uses
Tack Hammer	Light-weight hammer of hardened steel with flat face. Claws with graduated slot.	Putting up picture hooks. Tacking upholstery. Pounding small tacks or brads.
Ball Peen Hammer	Has both flat and rounded end. Made of hardened steel.	Used on metal work, riveting, etc. To pound dents out of curved metal objects such as a saucepan.
Automatic Ratchet-type Screwdriver	Equipped with a device which turns the blade automatically. Use up and down motion.	By setting adjustment on handle, can be used to draw out screws also.
Screwdriver—very thin and short		For use where space is limited and for small screws.
Thin-nose, Slip-joint Pliers		As name implies, thin nose allows use in tight places.
Automatic Push Drill	Same principle as automatic screwdriver.	Does more easily the work of the awl.
Flat and Rat-tail Files	Rectangular and round in shape, respectively.	For smoothing flat surfaces or sharpening certain tools. For enlarging small holes or smoothing concave surfaces.
Scraper	Wood handle. Cabinet type.	For smoothing flat surfaces before painting, such as table tops. Sharpen with file.
Brace—ratchet type	Equipped with device which holds a square-shank bit for drilling. Used, too, for driving screws with a screwdriver bit.	To drill holes in wood or metal. In tight corners where full turn cannot be taken, ratchet is set so that a partial turn is sufficient.
Set of wood Bits for Brace	¼, 5/16, ⅜, 7/16, ½, ¾ inch. Single thread.	For wood only. Keep free from rust, and cutting edge sharp.
Set of Carbon Steel Drills for Brace	1/16″, 3/32″, ⅛″, 5/32″, 3/16″, 7/32″, ¼″, 5/16″, ⅜″.	For metal. These should be sharpened when necessary with an emery wheel at a machine shop or garage.
Smoothing Plane	No. 4.	Smoothing wood surface, with the grain. If plane must be used across the grain, a block plane is better. Adjust blade in or out for depth of cut desired. Sharpen on oil stone.
Coping Saw	Wooden handle, metal frame. Looks like very fine wire stretched between posts of frame.	To cut irregular or curved lines, like the more expensive jigsaw. Blades cannot be sharpened.

Supplementary Tools—(*continued*)

Name	Description	Uses
Compass Saw	Short, pointed saw, about 2 feet long, including handle.	For making cut that starts from a hole in the middle of a board and sawing larger curved lines.
Hacksaw	Adjustable. Extra blades. 18- or 24-tooth blades. 10 or 12 inches long.	Sawing metal. Blades cannot be sharpened.
Ripsaw	5½ points.	Cuts along grain of wood much faster than a crosscut saw.
Wood Chisels	¼", ¾", wood handle, steel blade. Handle should be reinforced to prevent breaking from pounding.	Making grooves in wood, or making shapes not possible with a saw. Sharpen on oil stone.
Cold Chisel	¾" steel blade without wood handle.	For cutting metal or concrete. Sharpen on emery wheel.
Hatchet	Small axe with flat head and short handle.	Chopping wood, using one hand. Sharpen on emery wheel.
Steel Try Square	7½ inches long on steel side and slightly shorter on wood side.	To square off wood for cutting and to mark lines for miter or right-angle cuts.
Nail Sets	1/16" and ⅛" sizes. Small steel punches about 4" long.	For setting nails below surface of wood, driving out nails, etc.
Pipe Wrench	14" and/or 18". A flexible-head wrench with serrated jaws for gripping and turning pipe.	Pipe fitting.
Tinner's Snips	Giant all-metal shears. 12"–14" long with large handles and fat, short blades.	Cutting screen cloth, copper sheeting, tin, etc. Do not use to cut nails.
Soldering Iron—electric	A metal blade internally heated by electricity with wooden handle. 12"–15" long.	For fastening together pieces of copper, brass or galvanized iron by means of molten solder.
Glass Cutter	Hardened wheel set to turn in end of short metal handle.	Cutting panes of glass. Cannot be sharpened.
Putty Knife	Blunt-edged scraper with wooden handle. Blade may be anywhere from 2" to 4" wide.	To put putty in cracks or clean loose paint or other substances off flat surface.
Paint Brush	1½"–2" wide for general touching-up work.	
Oil Stone	Stone in a case from which cover is removed when chisel or other tool is being sharpened. Use oil to assist in sharpening.	Putting sharp edge on knives, chisels, etc.

Supplementary Tools—(*continued*)

Name	Description	Uses
Hand Emery Wheel	An emery wheel set in a frame which is clamped to a bench.	Turned by hand to grind axe edge, cold chisel, etc., or other rough sharpening or smoothing.
Machinist's Vise	Heavy set of clamps with movable thick jaws which can be clamped or bolted to a bench.	Holds work steady so that both hands can be used.
Woodworker's Vise	Same as machinist's, only jaws are usually of wood with gripping face of leather to prevent denting the wood.	Same as above.

Miscellaneous Necessities

Name	Use
Sandpaper, No. 0 and 1½ (fine and coarse)	Smoothing wood surfaces before finishing.
Assortment of small Nuts and Bolts	When the doll carriage or lawn mower needs a nut or screw badly, an assortment will often yield the proper ones.
Glue—casein	Gluing together two wood surfaces in a watertight joint.
Machine Oil	Oiling motors, hinges, sewing-machine parts, etc.
Wire (copper and iron)	Any number of odd uses, from fastening an aerial to repairing the car. Usually for temporary repairs.
Rosin-core Solder	Soldering.
Friction Tape	Covering exposed joints in electric cord. Non-slip handle on Junior's ball bat, as well as the family hatchet.
Rubber Tape	For insulation on exposed electric wire. This rubber tape is then covered with friction tape.
Faucet and Hose Washers	Replacing leaking faucet washers and hose connection washers.
Electric Fuses	To replace fuses in the electric panel when a temporary overload has blown one. Trouble should be discovered and corrected before current is turned on again.
Turpentine	Thinning paint. Cleaning paint spots. Dissolving floor wax
Putty	Filling holes in wood before painting. Also to hold glass in window when being replaced.
Plastic Wood	Filling cracks and holes in wood. Better than putty where water is present, and not so messy to work with.

CHAPTER XXXI

DOORS AND WINDOWS

Common Troubles with Doors

Some of the common troubles with doors can be cured easily, although serious defects require an experienced carpenter.

When a door squeaks, put a drop or two of sewing machine oil on the top of the hinge. Swing the door back and forth until the oil works down the hinge pin. Repeat until the squeak stops. If ordinary oil fails, use penetrating oil bought at the hardware store.

A door may rattle when a latch fits loosely in the strike plate, or slotted metal pieces screwed on the door frame. To find out whether this is the trouble, close the door, take hold of the knob and, without turning it, see whether the door moves back and forth. If the handle is firm and the door moves, the latch plate needs resetting. Unscrew it. Hold a piece of carbon paper, black side to the door frame, where the latch will strike it when the door is closed. Shut the door tight with the latch in, then release it until it strikes the paper. This will mark the new position for the slot in the latch plate. Fill the old screw-holes with plastic wood before screwing the plate back.

To take off a door take out the hinge pins. In replacing the door put the lower hinge-pin in first. Two workers can manage a door easily but it is a difficult job for an amateur to manage alone. Some old houses have hinges without a pin. In this case the hinge itself must be unscrewed.

To tighten a door handle unscrew one end of the knob after loosening the small screw found on the shaft. Put a metal washer or ring of wire around the shaft and replace the knob. If the handle is still loose, add washers until all the play is taken up. The washer must be large enough to fit over the shaft, but small enough in diameter to go into the escutcheon-hole.

Loose hinges may cause rattling, sagging or sticking. To test for a loose hinge, close the door and see whether the space between the latch side of the door and the framework around it is wider at one end than

the other. As a further test, open the door and pull it toward you to see whether it gives at the hinges. Make sure the play is not in the door handle.

To tighten loose hinges, drive screws farther into the hinge leaf. If this fails, take out the screws one by one. Put either plastic wood or a piece of wood match stock into each hole before resetting each screw. Another way to tighten a hinge is to replace the screws with others that are longer but of the same diameter.

Sticking or binding may be caused by expansion of the wood in damp weather, by softening of the paint on hot days, or by the sagging of the door or its frame when the house settles.

When a door swells in wet weather or summer dampness and sticks slightly, locate the spot and rub it with soap. Sandpaper the spot if it still sticks. Plane off some of the wood if sandpapering fails. Do not overdo the planing and make a loose-fitting door. Only about 1/6-inch clearance between door and frame is needed.

If the door binds in the center section of the top, mark the spot with a pencil or with chalk. Plane it a little with a smoothing plane, then try by closing the door. Try after each planing until the swing is clear.

If the door binds at the top near either end, use a block plane. Start at the outside edge and work inward, to avoid splitting the wood or leaving scars on the corners. Drive a wooden block or wedge under the half-open door to hold it firmly while you work.

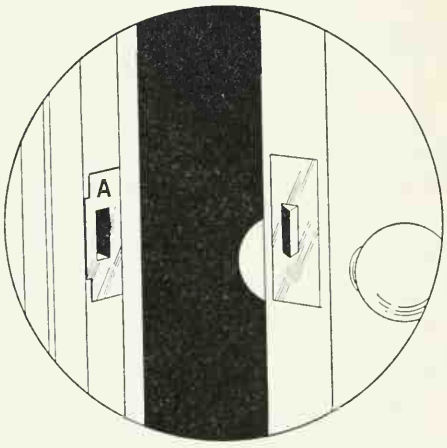
If the lower edge binds try smoothing it by swinging it back and forth over a strip of coarse sandpaper fastened on a piece of wood just thick enough to make contact with the section which binds. If the hinge edge has to be treated, call a carpenter.

If the upper outside corner of the door strikes on the jamb, and the lower outside corner drags on the frame, tighten the screws in the hinges. If this has no effect, remove the screws in the top hinge-leaf on the jamb and put a thin piece of wood or cardboard called a "shim" beneath the hinge-leaf. Screw the door back in place. If this corrects striking, but leaves a wide crack between door and frame, insert a second shim, this time between the outer edge of the lower hinge-leaf and the door. The test of whether adjustment is right is no striking, an even crack all the way around and stationary hinge-pins. If the pins move, thinner shims are needed.

If a door fails to latch diagnose the cause first. The door may be too

narrow. The strike plate may be too high or too low. The spring in the latch may be weak or too tight-fitting to engage, or the door may have warped. Each has its specific remedy.

Try a few drops of oil on the latch first. If this has no effect and the latch fails to catch, remove the latch plate and nail a short thin strip of wood, or shim, to the inside of the door frame on the latch side. Replace the latch over this strip. This will overcome narrow gaps. If the door is noticeably too narrow, all the way from bottom to top of door



Drawing by Grande

This section of a door shows the latch and latch plate. If a door rattles or fails to latch, the latch plate (A) may need to be reset.

frame, nail a strip of wood the whole length of the door frame. Before doing this see whether the crack between door and frame is wide enough to admit even a thin strip.

A more complicated remedy is to take the door off its hinges and fill each slot in which the hinge leaves were set with a thin strip of wood or cardboard. If the latch has nearly worked before, this will throw the door far enough to the latch side to make it engage. If the space is large a strip of wood may be nailed the whole length of the door frame at the hinge side, new mortises made in the strip and the hinges reset on it. This method involves more work, but a strip of wood set at the hinge side will be less noticeable than one set at the latch side.

If the latch strike plate is a little too low to catch, unscrew the plate and replace it, centering it with the face of the latch. A small section may have to be cut out of the door frame to accommodate the latch plate in its new position. If this leaves a crack, fill it with plastic wood. To find the place where the latch strikes, mark it by using carbon paper on the door frame as described on page 528.

If the latch spring is too weak to catch easily replace it with one bought at the hardware store. Unscrew and take out the door handle. Remove the screws above and below the latch in the metal plate on the door edge. Gently pry out the plate with a screwdriver until you can grasp it. Pull it out. This will bring out the attached housing which holds the latch mechanism. Take out the screw that holds the housing cover in place. Inspect the mechanism carefully, to know where each part goes in case anything gets out of place. Remove the old spring, a flat piece of steel an inch or so long and about a quarter of an inch wide, and replace it. Put the housing cover back on, fasten the latch plate back in place and replace the door handle.

If a door warps so that it is hard to close and impossible to latch, try adding a third hinge at a spot exactly halfway between the other two. All three hinges must be set on precisely the same perpendicular line. Cut wood away to make beds for the hinge leaves so that they will be level with the surface of jamb and door.

Fitting a pane of glass in a door may save bruises and falls and let in needed light.

Remove the door from its hinges and lay it flat on the floor or on a work bench. Use a chisel to cut or pry out the moulding around the panel to be replaced with glass. Avoid splitting the wood by working slowly and carefully.

Cut the moulding only on one side of the door, leaving the other side intact. For an outside door, remove the inside moulding. Take it off from the less conspicuous side of a door between two rooms.

When the panel is out, sandpaper the edges of the opening and measure it carefully, allowing a scant 1/16 inch in length and width to serve as a bed for the glass and for expansion. Buy a sheet of glass cut to this size. Double-thickness or shatter-proof glass is desirable; plate glass if it is to fill the entire panel space. To set the pane, first paint the bed where the glass is to be set with linseed oil or a thin paint to act as filler, then put a thin layer of putty over this. Set the glass in the putty and replace the moulding tightly enough to prevent rattling but not so tight as to break the glass.

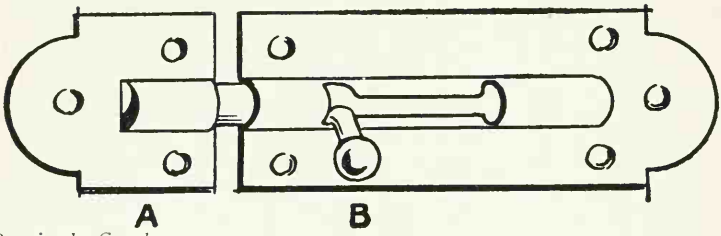
After the moulding is in place and the putty has dried thoroughly, touch up the marred spots with stain or paint and rehang the door.

Cracked door panels may be treated with crack filler or plastic wood finished to match the rest of the door. If the crack is wide, the panel will have to be replaced with a new piece of wood the same thickness as the original panel, using the same method as for fitting a pane of glass.

If the door is stained or waxed, a replacement should match the wood in the original panel. If the door is painted, this is not important.

For simple inside locks, provide *skeleton keys* to use in emergencies when regular keys have been lost or forgotten. These keys are of two types and one or the other will open most ordinary locks.

Bolts. If a bolt fails to go easily into its slot or ward unscrew the ward and replace it in the right position.



Drawing by Grande

Ward (A) and bolt (B). Reset the ward when a door sags.

Door seals are metal flanges holding a strip of fabricated material. The strip drops down to block any passage of air between the bottom of the door and the sill. Seals keep out annoying small cold air currents and their use helps to save fuel. They may be bought at a hardware store and nailed to the door.

Non-slamming devices are of many ingenious varieties, a wooden wedge, a strong steel spring, a flexible steel plate with rubber ends, or ornamental cast metal weights. A plunger-type door stop with a rubber foot or roller is particularly adapted for installation on swinging doors.

Automatic door closers help keep out flies and other insects in a house where children may be careless about leaving doors open. They also prevent storm doors from being blown open and broken.

Windows

Window parts are essentially simple and, after a little study, not difficult to repair.

If windows in wood frames do not work easily, the stop or parting-strip may fit too tightly because of swelling in damp weather or too much paint, the sash may have swelled, paint may have hardened around windows and frames, or the house may have settled, making the frame crooked.

When windows stick, first try rubbing paraffin or heavy floor wax along the length of the groove in which the sashes run. Wait for dry weather to do this. Even if it does not cure the condition, it will help prevent future trouble by protecting the wood from dampness. Sometimes snapping the weight cords will start a lower sash that refuses to go up.

If the window stop or inside guide has swelled so that the groove in which the sash slides up and down is too narrow, open the sash, place a block against the outer edge of the stop, and pound it inward. If this fails, take off the stop and reset it. Most stops are held on by screws. If they should happen to be nailed, pry gently with a chisel until the nails are loose enough to be drawn out with the claw end of a hammer. Protect the surface of the wood with cloth so that the hammer will not mark it. When replacing the stop, it is better to make new holes for screws or nails. Fill the old holes with putty.

For hardened paint which keeps a window from moving, use the steel blade of an old kitchen knife. Work the blade up and down in the crack between sash and stop. If it is a downstairs window which can be reached from the outside, run the knife blade between sash-frame and parting-strip or outside guide. In getting the sash up, strike the top of the frame near the sides, and not in the middle, to prevent danger of starting the frame away from the glass, but do not use so much force that putty is loosened. If the sash still sticks take a small block of wood and move it up and down the sides of the sash-frame, tapping the block lightly with a hammer each time it is moved and then run a knife blade along the horizontal division or meeting-rails between the two sashes.

Rattling results if the track in which the lower sash runs is too wide. Reset the stop closer to the sash but be careful not to get it so close that the window will stick.

Rattling window panes mean that putty around the glass has dried, loosened or fallen out. Replace with new putty, taking care to remove all the old hardened putty before putting in the new. (See setting broken window pane, page 534.)

To take out window sashes take off the lower sash first, by removing the stop. To take out the upper sash, pull out the parting strip that forms the inner edge of the track for the upper sash. As a rule this can be done with the fingers but if it binds, start it by prying gently near the middle with a chisel.

If any *repairs to the window cords* need to be made, look next for

the oblong strip which covers a pocket in the frame. It is usually screwed or nailed on. When it has been taken off the weights are exposed. The pair of weights on the outside edge of the window counter-balance the upper sash. Those on the inside edge of the frame serve the lower sash.

Each weight is fastened by a cord to the top of one side of the sash. From this fastening the cord goes over a pulley near the top of the window frame.

Repairing cords should only be attempted by a patient and painstaking amateur. If cords are broken, the window will not stay up at all unless held by hand or braced with a stick. If cords have stretched, the window tends to crawl down slowly.

If the cord has stretched, untie it from its anchorage on the sash, cut off an inch, and reanchor. If this does not cure crawling, take off a little more cord. Proceed cautiously, for if the cord is too short the weight will hit the pulley at the top when the sash is closed.

Repairing springs in old window frames is not difficult. The springs are found in houses built about 50 years ago. They hold the sash up at various heights. If the spring fails to work, put a screwdriver under it and pry it out. If it is broken, buy a new one and drive it in. If it is merely sluggish, drop it into kerosene, cover it and let it soak for an hour or two. Flush it with soapy water, rinse, put on one or two drops of sewing machine oil and replace.

If the spring fails to hold because the holes in which the plunger engages are worn, fill the cavities with plastic wood and remake the holes. Or glue in a wooden plug and rebore the hole. If plastic wood is used put it in little by little, waiting for each addition to dry before adding the next.

A special strip spring which will hold a window at any height can be bought and installed instead of fixed-height springs. Directions for installation come with the equipment.

Resetting broken panes of large size should not be attempted by an amateur. Small panes may be replaced. Buy glass cut to size at the store where it is bought. Measure each of the four sides of the frame around the space to be filled. This is especially necessary in old houses where frames holding glass may have warped. Subtract 1/16 to ⅛ inch from each measurement to allow for expansion of the glass.

Most failures in amateur glazing are caused by lack of thoroughness in taking out the old hardened putty. Every particle must be chipped out. Be careful not to injure the wood of the frame. If the putty is very hard, use putty remover.

Let putty remover remain at least 12 hours, then remove it. The putty will come with it. Wash the wood with soap and water, rinse well with clear water. Let the wood dry. The slot which takes the putty is called the rebate. Coat the rebate well with linseed oil to prevent absorption of the oil in the putty until it dries out and cracks away.

Commercial putty is recommended for amateur use but do not buy cheap prepared putty. It may shrink or fall out soon after drying. Crevices made will welcome dirt, moisture and drafts, and tend to increase heating costs.

To apply putty, fill the rebate generously. Set in the glass so that a tongue of putty is squeezed out on the outside. Add more putty on the inside, and with a putty knife bevel off, up to the corners of the rebate on each side. Trim off the putty on the outside. For smooth work, moisten the putty knife often in soapy water.

If, after experience, a large pane of glass is replaced, use zinc glazing points, bought at any hardware store. First set the glass in the frame on the putty bed and then put in four points on each side, 2 near the corners and 2 spaced equally away from the middle. Points help support the weight of the glass in the frame. Add as many points to the first ones as are needed to space them six to ten inches apart. Finish puttying over the points.

Keep all window sashes painted. This is particularly necessary with metal sash, to prevent rust, even if the sash has been rust-proofed as part of the manufacturing process.

Window Shades

Repair of shades. Roller shades frequently fail to go up because the spring is unwound, will not catch, is too stiff or is broken.

If the spring is unwound or fails to catch, put the shade in place and roll it down about a foot, then take the roller out and roll the shade up by hand. Put it back and try. If the shade still is sluggish, repeat the operation, this time rolling the shade down about two feet before you take it out of the slots. Repeat until the right spring is found.

If the spring is too stiff, so that the shade flies out of hand, reverse the process. Take out the roller with the shade wrapped completely around it, roll it *down* about a foot, replace it and try. Repeat until the right spring is obtained.

If the spring is broken, it is cheaper to buy a new roller than to attempt to repair the old one.

Care of shades. Adjust the tension of the spring so that the shade rolls up and down easily. Never allow the shade to flap. Raise and lower carefully and straight. Keep the hand on the curtain pull so that the shade has no chance to run up too fast. If it begins to run crookedly, start it again.

Common Troubles with Venetian Blinds

Sometimes a Venetian blind may go up faster on one side than on the other. This usually means the cord adjuster should be replaced, or one added if your blind lacks this device. It is a sort of double loop of metal. Each one of the pair of cords goes through one loop. If the adjuster has slipped, pull first one cord and then the other through its loop in the adjuster until you find the proper spot to give smooth level action. If the first change makes the slant of the blind worse, it is the other cord which needs adjustment.

The mechanism which controls the angle at which slats can be set should be of rust-proof material, guaranteed to stay in place at any point. It has its own separate pull cords. If it is not working properly apply a drop of oil with a feather or a splint of wood.

CHAPTER XXXII

REFINISHING AND REPAIRING FURNITURE

If a careless visitor has scratched the top of a fine table or burned the finish with a cigarette the best thing to do is send for a "patcher." Almost any piano dealer can tell you how to get in touch with one of these experts and you will often find that his services cost no more than the materials you would have to buy in order to do the work yourself. Then, too, the methods he uses and the results he gets are far beyond the scope of an amateur. For example, to repair a scratch the "patcher" uses a special amalgamizer or solvent for lacquer or varnish. With deft, light touches he softens the finish on either side of the scratch and works it into the scratch. When he has finished the job you will be at a complete loss to find the place where the scratch had been!

On the other hand, if you own a well-made piece of furniture that has good lines and that could be useful if the finish were not so completely shabby, it will pay you to undertake the job of complete refinishing.

Refinishing an entire piece of furniture is not easy work. Each step must be taken with care and patience. Obviously a poorly designed or flimsy chair or table is not worth the effort. The decision is up to you.

REMOVING THE OLD FINISH

For this work you will need:

Paint and varnish remover (good grade) or lacquer thinner (see next page)

Paint brush

Putty knife

Burlap

Steel wool (medium)

Rubber gloves

Lintless rags

1. Apply paint and varnish remover generously to a small area with paint brush. Allow it to stand until the old finish is softened. If the finish is lacquer, paint and varnish remover will not soften it. Lacquer thinner is used instead. It evaporates rapidly and must be used on a small area at a time. Work in a well-ventilated room *away from fire or flame.* Lacquer thinner is preferred for removing the finish from mahogany pieces because paint and varnish remover turns this wood a purplish hue.
2. Lift off the old finish from flat surfaces with a putty knife, holding the knife flat against the wood. Use burlap on turnings or carvings, following with steel wool. Wear rubber gloves to protect your hands.
3. Repeat until the entire surface has been treated. If the old finish is not completely removed, use the paint and varnish remover a second and even a third time. Wash away the residue of remover with turpentine.

It is essential to remove every bit of the old finish.

PREPARING THE WOOD FOR A NEW FINISH

1. If the color is still too dark after the old finish has been removed, use one of the new powerful commercial wood bleaches, following the manufacturer's directions carefully.
2. Wrap sandpaper (No. 2/0) around a flat block of wood and sand the surface until it is perfectly smooth, sanding with the grain wherever possible. Finish with No. 4/0 sandpaper. This will take plenty of time and plenty of elbow grease.

FINISHING

Now the furniture is ready for finishing. Perhaps you are entirely pleased with the color and grain that has been exposed. If so, there is no need to apply stain. Either of the following finishing methods may be used:

Method I

1. Apply a coat of the new-type varnish which has a *synthetic resin base,** with a fine camel's hair or badger hair brush. (Never apply this type of varnish with a cloth, even if the directions tell you to!)

*This type varnish gives a very hard finish that is resistant to heat, water and alcohol and almost scratchproof. *Never* thin this varnish with oil—use turpentine if thinning becomes necessary.

2. Let dry *thoroughly*.
3. Sand lightly with the grain, using No. 4/0 or No. 6/0 sandpaper wrapped around a wood block; wipe clean with dry lintless rag.
4. Repeat, applying 2–3 coats of varnish, drying thoroughly and sanding after each application.
5. Finish by rubbing with rottenstone or powdered pumice and raw linseed oil (page 188). The harder you rub and the longer you rub, the lovelier the finish will be.

Method II

1. Apply a thin coat of fine grade white shellac. (Orange shellac imparts an orange color to the wood.)
2. Let dry *thoroughly*.
3. Sand lightly with the grain, using No. 4/0 or No. 6/0 sandpaper wrapped around a wood block; wipe clean with dry lintless rag.
4. Apply a coat of 4 parts white shellac and 1 part alcohol.*
5. Let dry *thoroughly*.
6. Sand lightly, as above.
7. Polish (page 185).

We do not recommend lacquer as a finishing material because it is not easy for an amateur to use. It should be sprayed on, because it dries too fast for brush work.

Staining

Perhaps you feel that staining would improve the appearance of the furniture:

1. Apply a thin coat of white shellac to keep the stain under control. Let dry *thoroughly*.
2. Apply water stain (never use varnish stain) in the desired color.
3. Sand lightly and *carefully* with the grain, to avoid cutting the stain.
4. Apply a second thin coat of shellac. Let dry thoroughly.
5. Apply a standard paste filler with a brush. When it starts to harden, wipe it off *across* the grain, with burlap. A few minutes later wipe it *with* the grain, removing all filler that has not entered the pores. Let dry *thoroughly*.

*Some authorities advocate three coats of shellac, drying and sanding after each coat.

6. Sand lightly; wipe off.
7. Apply a third coat of thin shellac.
8. Sand lightly; wipe off.
9. Apply final coat of shellac or varnish with synthetic resin base.
10. Rub down with rottenstone or powdered pumice and linseed oil (page 188).

"Pickling" Furniture

There is nothing new in the idea of bleaching or pickling furniture. Even the Egyptians bleached and dyed the woods that were used in their furniture inlay. However, the methods of bleaching are new, and it is these methods that have brought blond woods into such vogue today.

A few years ago the bleaching process was held as a secret by a few exclusive refinishing shops. To be sure, bleaching is not easy and there are no short cuts, but any one who has ever refinished furniture or ever done a first-class job of painting furniture can bleach or pickle too.

A few general rules and precautions are necessary before you start the actual work of refinishing. Remember that, if the job is to have a professional appearance, care and patience are of first importance. Materials should be of the best. Use only brushes of good quality or you will leave streaks and stray hairs on your furniture surface. You cannot get the same results with a ten-cent brush as with a high grade brush.

If you are refinishing an old piece of furniture, the surface, after the old finish is removed, must be clean, dry and smooth before you start your job of putting on another finish.

While each kind of wood requires some variation of the pickling process there are four definite steps in the work:

1. First of all, the old finish must be removed (page 537).
2. Next bleach the wood (page 538). Rinse with clear water to remove all bleach. When the wood is dry, sandpaper the surface with a fine-grained paper and brush off the dust, or use a suction vacuum cleaner to draw it off.
3. Then rub on white lime or white lead or a coat of flat white paint and wipe off almost at once. After a day or two of drying, apply a thin coat of shellac. Dry thoroughly. Sandpaper the surface lightly with fine-grained paper.

4. The final process is to apply liquid wax. From three to ten coats can be put on according to your patience.

These general rules apply to all woods, but the process is varied with each wood and the results also vary in tone.

Pickled pine, which is perhaps the most popular, is the lightest in tone and the process is easier as it requires less bleaching, unless, of course, the pine has previously had a dark walnut or mahogany stain.

Oak when pickled shows more wood grain than pine and is thus darker. If you are working on a piece of fumed oak you may need to use two or three applications of the bleach as the grain of the oak holds the old finish.

Mahogany and cherry give a pinkish, warm-colored surface when pickled. These woods also need strong varnish removers and concentrated bleaches. The fruit woods give light platinum tones when bleached and are particularly lovely.

By varying the pickling process you will find that there is no end to what can be done to any ordinary wood. For example, an ugly golden-oak dining table given a bleaching and a plate-glass top becomes an attractive modern table. Turn an old mahogany secretary into a bleached blond, substitute wire netting for the glass in the doors, and you have a piece of furniture that will give distinction to any room.

Painting Furniture

One or two pieces of painted furniture add a gay note to an informal room, and painting is a quick and easy way to finish or refinish wood that has no particular beauty of grain.

Cheap enamel paint is no bargain. It never dries hard and it will not stand up well under use. A new type of enamel paint has a synthetic resin base and produces a durable finish, resistant to heat and wear.

When an undercoater is used, it is best to buy the brand made by the manufacturer of the paint you select.

Unfinished Furniture

1. Sand thoroughly with fine sandpaper wrapped around a padded wood block. Wipe off with soft lintless rag.
2. Apply undercoater if enamel paint is to be used, or apply a first coat of enamel thinned 10 per cent with a thinner made by the manufacturer of the enamel. Let dry thoroughly.
3. Sand lightly with No. 2/0 or No. 4/0 sandpaper.
4. Apply first coat of enamel.

Stir the enamel thoroughly in the can with a clean metal or wooden stick so that the pigment will be thoroughly mixed and blended.

Dip clean soft bristle brush deep in the can, filling bristles full. Correct sags or runs with a full brush, never with a dry one. Let dry thoroughly.

5. Apply second coat of enamel. Let dry thoroughly.
6. Rub with pumice or rottenstone and oil (page 188).

Painting over an Old Finish

1. Wash (page 186) to remove all oil, wax, furniture polish or grease. Let dry thoroughly.
2. Sand with No. 0000 sandpaper wrapped around a wood block. Wipe off with lintless rag.
3. If finish is scarred or marred, apply one coat of undercoater made especially for use with the paint you have chosen.
4. Apply paint as for unfinished furniture (points 4, 5, 6, page 541). If synthetic enamel is used, one coat may be enough if the old finish is in good condition. If two or more coats are used allow ample time for drying between coats.

Turn tables or chairs upside down and paint the legs first.

Porch and Garden Furniture

The new type enamel paint which has a synthetic resin base is excellent for painting wood or metal furniture that is used on the porch or out of doors:

1. Remove rust from metal furniture (page 211).
2. Brush off any scale with wire brush, steel wool or coarse emery cloth.
3. Touch up any bare metal spots with a coat of metal primer.
4. Apply two coats of enamel, allowing plenty of time for drying between coats.

A simulated "pickled pine" finish is popular for rattan furniture:

1. Apply a thin coat of white enamel paint.
2. Wipe off most of the paint.
3. Let dry thoroughly.
4. Apply one coat of synthetic resin varnish.

Wicker furniture can be painted successfully. Enamel paint should be flowed on with a full brush. Never stroke back and forth. Do not allow paint to settle in crevices because it will always remain wet and gummy.

STRUCTURAL REPAIRS

It often happens that prompt attention to minor injuries will ward off the necessity for costly furniture repairs.

If a chair or table seems insecure, see whether the legs have worked loose. If the legs are bolted on, tighten the nuts. If they are screwed on, tighten the frame either by driving the screws in farther with a screwdriver, or removing and resetting them. Fill the old holes with plastic wood or glue before resetting. If the old screws are rusty or damaged, replace them with new ones. If the old screws are too loose, use new ones that are somewhat larger in diameter. Do not use longer screws except as a last resort, and do not use any that are very much larger in diameter than the old ones, or the wood may split.

Applying iron braces or wood corner pieces with glue and wire nails or small screws often will tighten loose legs or rungs.

If a piece is just beginning to work loose, regluing may be needed, especially in overheated houses where the glue gets very dry. This is true particularly of chair rungs.

Good casein or hot glue may be a stronger and more effective mending agent than nails or screws. For minor repairs, cement such as that used for model building is excellent. If the wood in the furniture is strong, glue plus nails or screws will make a permanent repair.

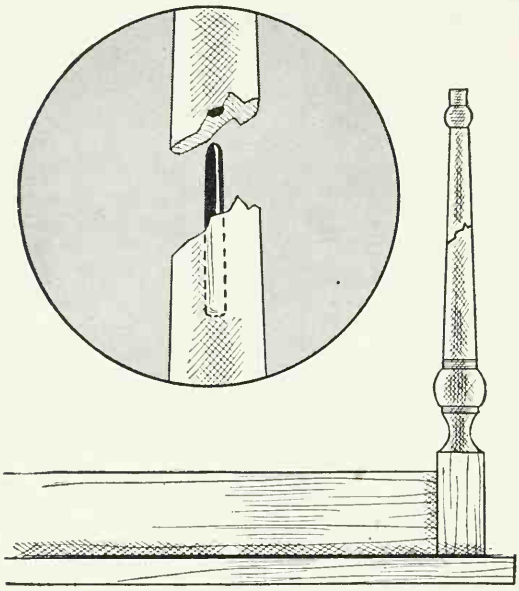
An excellent way to tighten a loose chair rung is to use metal rung fasteners sold by hardware dealers or by mail order houses. They are inexpensive, hold firmly and are simpler to use than glue. They are hammered into the rung, and then the rung, driven home, locks them in so that any strain only fastens them more firmly.

If the chair still creaks or sways after the rungs have been reglued or fastened with rung fasteners, examine the top bar on the chair-back, unless it is covered by upholstery. If it seems loose, reglue it, using the same method as for the rung.

Tightening loose chair rungs with glue: Heat the ends of the rungs to be glued and apply hot glue to end of rung. Swab the slot into which the ends are to fit with the warm glue, and press the rung in place. Take a clothesline, a firm rope or a strong strip of cloth and tie it securely around the legs of the chair. Insert a strong stick between the two lines of rope or cloth and twist, as in a first-aid tourniquet. When

the rope is tight, put the stick behind the rung to prevent its untwisting. Wipe off excess glue with a clean, damp cloth. Allow at least 24 hours for drying.

In gluing together parts of a piece of furniture, remove all the old glue first by scrubbing with hot water. Dry thoroughly. Heat the new glue and apply hot. Clamp or tie the broken part in place to dry for



Drawing by Grande

A broken table leg can be mended with a dowel glued into holes bored in each section of the break, as shown here, and may be stronger than it was when new.

at least 48 hours. Inexpensive small clamps may be bought at the ten-cent store.

Mending broken parts of a wood frame: Legs, arms, or rungs that are split should be mended either with glue or with dowels, which are pegs of wood, like pencils, inserted inside the two broken parts.

A break which is simple and clean, so that the pieces fit back firmly into place, may be repaired by using glue only.

To use a dowel: Make holes with an auger in each of the broken pieces. The holes must be less than a third of the diameter of the leg, and about half an inch deep.

Buy a dowel long enough to fit firmly the whole length of the hole on both sides of the break. Doweling of various diameters may be bought for a few cents at a hardware store or lumber yard. About ¼-inch diameter is suitable for most furniture repairs.

If screws are used in addition to the dowel, for extra strength, prepare countersunk holes. This means that the top of the hole is widened enough to make a bed for the head of the screw, so that it will either be on the same level as the surface of the piece to be mended, or slightly below it. If the holes are to be filled with plastic wood or putty so that screws will not show, countersink more deeply, to carry the screwhead into the wood.

If two or more screws are used to strengthen a mended chair or table leg, the holes should run alternately in opposite directions. If one screw goes in toward the left from the right side, the next one should be screwed toward the right from the left side.

After preparing holes for the screws with a gimlet, try all screws to make sure they will fit, then take them out and glue the two pieces together around the dowel. Place screws while glue is still wet. After the glue has dried, it may be necessary to tighten the screws.

Tightening a cane seat which has sagged: Turn the chair upside down and lay a damp towel on the under side of the cane. Let it remain there for half an hour. Remove it, but leave the chair upside down until the cane dries completely. The moisture and drying will take up some slack in the chair. If it still sags, have the cane replaced.

Repairing sticking drawers: Drawers of chests or tables which fail to slide easily may be made to work well by diagnosing the cause and applying the proper remedy.

If the wood swells or the frame warps, wait until the heat has been on in the house for some time to judge how much wood needs to be sandpapered or planed off. Find out whether sticking is at the top, bottom or sides. Usually the place that sticks is smoother and shinier than the other surfaces. Take special care in sandpapering or planing on the front edge of the drawer, where it is likely to show. Place at a bevel or slant, away from the front, so that the top outside edge of the drawer remains at its original level even though the inside edge is lowered.

If the drawer back-stop is knocked off or too worn to work mark the position of the stop and remove it. Match with another piece and insert the new stop on the marked lines. Fasten with glue and nails.

If the runners for the drawers are too deeply indented, rub on soap, candle wax, paraffin or heavy paste floor wax. If this is ineffective, re-

move all traces of the grease and glue and nail a strip of thin wood over the worn runners to restore their former level.

Loose handles may merely need to have a nut or screw tightened on the inside of the drawer, with a screwdriver or a wrench. The handle should be held firmly in place on the outside while this tightening process goes on. If the handle is still loose, refit it with glue. If the seating or indentation made for the screw is too large for the screw-head, use a leather, metal or rubber washer, or several of them, to make it fit closely. Put the washers in place around the screw before tightening it.

Repairing wood dining tables: If the top is loose, turn the table upside down and tighten all loose screws, bolts or unglued corner blocks. If the corner blocks are of wood and chipped, replace them with metal ones, screwed firmly in place.

If the leaves of the table are not level, never try to sandpaper or plane the surface. Most leaves may be made to fit by trueing up the dowels and the holes into which they fit when the leaves are in use. If the hole for a dowel is worn, it will naturally make the leaf lower than the others. A sliver of wood can be glued into the hole on the under side. If a leaf is too high, the dowel probably fits too tightly. Scrape a little from the bottom of the dowel with a piece of No. 1 sandpaper. Do the scraping gingerly. It is hard to replace a section where too much has been removed.

Warped drop leaves are a common trouble. The slope can be partly remedied by gluing a wedge on the top of the support which swings out to hold the leaf in place. Make the wedge wide on the outer end and narrow it down to nothing at the other side. It should be just as long and as wide as the top of the leaf support. After applying glue put up the table-leaf. The weight of the leaf will be all the pressure needed during the 48 hours allowed for the glue to dry. Do not use the table during this time.

REUPHOLSTERING

If time is of value, amateur upholstery should not be attempted, for it is a slow, laborious process. However, no special skill is needed to recover a chair or a spring seat. Here are the step-by-step directions:

1. Prepare the chair for reupholstery by removing, in order, the gimp or braid, outer covering, inner muslin covering and padding, to reveal the springs. Under the springs are the webbing and the lining.

2. Examine the springs and the webbing. If they need repair, dismantle chair right down to the frame and pull out all tacks. (The position and spacing of springs should be studied when the chair is being dismantled—see page 546.) Glue any loose joints and strengthen them with small angle irons. If the frame is a bolted one, tighten all bolts.

3. If the chair needs refinishing, refinish the tightened frame as the next step (page 537).

4. To replace the webbing, choose 3½-inch webbing of good quality and use at least two rows from side to side and at least three rows from front to back—more if the seat is larger than average size. Use enough rows so that not more than an inch of space is left between the strips. The webbing is the support of the springs and padding, and must be strong. In putting it on, work from the underside of the seat. Place the center strip from front to back first. Tack one end, folding it over about an inch and using 4 or 5 ten-ounce upholstery tacks to secure it near the middle of the rail of the seat frame. With a webbing stretcher, pull the strip of webbing tightly across, and anchor it with at least 5 tacks. Cut off, allowing an extra inch, then fold that extra inch back and tack it down with 3 or more tacks. Put on the rest of the front-to-back webbing strips in the same way, and then fasten on the side strips. Interlace the side strips with the front and back strips before stretching and anchoring them.

   If the springs need replacing, plan them according to the area of the seat cushion. No spring should come within 2 inches of another spring or of the rail of the chair frame. Well-constructed chair seats usually take from 9 to 12 springs each.

5. Sew the lowest round of each spring on the webbing where two strips cross each other. The loose end which bends downward must be on top. Sew in three or four places with mattress twine, using a straight upholsterer's needle. In sewing, make a close loop over the bottom coil of spring wire on top of the webbing, and use a long stitch on the underside from point to point of fastenings. The sewing is much the same as in fastening snaps to a dress, except that imaginary points on the bottom of the coil of the spring are used, instead of perforations.

6. When springs must be fastened to boards, as in the case of a couch or chaise longue, a different procedure is used. Fold each of two or three pieces of ticking (5½ by 1¼ inches) in half crosswise. Fold

these doubled pieces over the bottom wire of the spring and tack them with three No. 8 tacks, close to the wire. Put small pads of cotton under the bottom coil to prevent it from rattling against the wood. The *centers* of the springs should be about 7½ inches apart.

7. A wire edge must be used on the front edge of large chairs and sofas. The wire is fastened to the edge springs which are even with the front edge of the furniture, with a double thickness of mattress twine about 15 inches long.

8. When the sewing is finished, tie the tops of springs in place. Use jute spring twine No. 60. Cut a number of lengths about 1¾ times the distance across the chair seat. Wrap one end of the twine around a 10-ounce tack and drive the tack into the top edge of the frame in line with the center of the spring. Push the outside edge of the spring down until it is about an inch lower than the inner edge. Hold the spring in this position with the left hand, and with the thumb and forefinger of the same hand, pull the twine taut from the tack. With the right hand, pass the free end of the twine down inside the coil, up on the left side, down inside the coil again, up on the right side and through the loop thus formed. Pull the twine tight, making a clove hitch.

9. Repeat the clove hitch for the opposite side of the same spring, except this time the twine goes over the outside of the top coil first, then up on the inside.

10. Continue in the same way, tying each spring in the same row in rotation, linking them together, until the back rail is reached, then tack twine to the rail.

11. All springs must be tied 4 times: front to back, side to side and 2 diagonals, making 8 knots around the top edge of the spring (the so-called 8-way tie). Tie the last string to all the others, crossing in the center at the top. Completely tied springs should all stand erect with a slightly rounded contour over the top, like an even, flat dome.

12. Cover the springs with a piece of medium weight burlap. Turn over the edges and tack all around the frame. Use 4-ounce tacks and be careful not to flatten the springs.

13. The padding which was formerly used in the chair may be used again, if it is in good condition. Otherwise, replace it with hair or fiber-moss padding. Work the padding well down over the edges of the frame. Make it thick enough so that springs are not felt

when the top is pressed down. Cover padding with a second piece of burlap and stitch the two pieces of burlap together through the padding, taking stitches over the center of the spring coils, and a few inches in from the corners of the seat.

14. Stitch patent edging (about 1 inch in diameter) around the front and sides of the seat cushion. This edging can be purchased in any upholstery supply house. Edging can be made of burlap firmly stuffed with cotton, if desired.

15. Put a generous layer of cotton batting or cotton felt over the top layer of burlap, tucking the edges of the batting under the layer of the padding, and cover the whole with unbleached muslin, which is known as inner covering. Tack the muslin at center back of the frame. Pull it firmly over to the center front and tack it there directly across from the first tack. Repeat with tacks in the middle of each side. Turn the muslin half an inch before tacking. Finish tacking evenly all around, putting in 4-ounce tacks about an inch apart. Tack on a line which will later be covered by the outside layer of upholstery fabric.

16. Use a generous roll of cotton felt, hair or fiber moss over the front edge of a chair seat, back and arm edges. A pad separately made and covered with muslin is good. The edge is the point of greatest wear and it needs special protection.

17. Cut the outer covering, using the former cover as a pattern. After the muslin cover is on, tack the outer covering over it on a line which will conceal the muslin completely.

18. Gimp may be marked for tacking before it is put on with small dots of contrasting color, if you do not trust your eye for measuring distances. Make the dots small enough, of course, to be hidden by the tack heads. Use No. 4 gimp tacks at intervals of from 1 to 2 inches.

19. Cambric underlining on the bottom of a chair or sofa gives a tailored finish and protects the webbing and springs from dust. Cut a piece of black cambric a little larger than the size of the under part of the chair and tack it on with No. 4 tacks, turning in half an inch all around. This hides the webbing and springs and keeps loose filling from falling to the floor.

Box seats and backs have no webbing. In these the springs are fastened in a box which is removable from the frame. If springs are loose, they must be retied as in the other type of upholstery. If the box sets high upon a frame, the springs must be padded and

covered before the box is replaced. Muslin is tacked to the top of the box frame, but the upholstery fabric cover that shows is drawn over the side and tacked there. Ordinarily no gimp is needed but if the box sets on top of the frame instead of down into it, gimp may be used at the junction of the covered box and the chair frame.

CHAPTER XXXIII

MISCELLANEOUS TINKERING JOBS

Screens

Screens that are made of good material and well constructed should enjoy a long life if they are given good care.

In buying wood-framed screens, specify mortise and tenon joints which are strong and durable.

Full-length screens are most convenient, because they can be simply adjusted on hangers which are practically impossible to get out of order. They are also easy to install and remove. With full-length screens, windows can be opened top and bottom to obtain better ventilation in a room, without allowing insects to come through. They are the only possible kind with casement windows.

Full-length screens over windows with wooden sashes are set on the outside of the window frame and hung from special hooks available at any hardware store. The hooks are left permanently in place on the outside wall of the house and the eyes that fit over them are also permanently fastened to the screen frame. They must be installed for the season by standing on a ladder and working outside the house, but the work is simply a matter of hooking them on, which in itself takes no time at all.

Half-screens, set in the lower half of a sash window, run on wood tracks and tend to get out of order because the tracks warp. They cut off less light but since the upper part of a window is usually curtained this gain is small. They can be put in and taken out from the inside of the house.

To mend tears or holes in screens, follow this procedure:

1. Trim edges of hole.
2. Cut patch (slightly larger than trimmed hole) from matching screen wire.
3. Unravel the edges of the patch for about ½ inch all around. Bend ravelled edges at right angles.
4. Place patch over hole; catch ravelled edges into screen; turn under and press down.

Or, if preferred, the patch can be "sewed" on with a piece of screen wire.

A tear anywhere along the line of tacks fastening the screen to the frame is often impossible to mend. In such a case the torn screening must be replaced with new. In buying screening, remember that bronze or copper wire screening will last almost indefinitely; galvanized wire is reasonably durable if it is painted at fairly frequent intervals; cheap iron wire will rust in one season unless it is painted. Screening can be bought in widths ranging from 18 to 48 inches and in mesh ranging from 12 to 18 wires per inch; 16-mesh is best for all general purposes.

To replace old screening with new, take the following steps:

1. Remove molding.
2. Remove a few tacks at one corner.
3. Hold frame firmly with one hand and give loosened wire a sharp upward pull. This will free the old screening from the frame.
4. Remove all tacks.
5. Cut the new screening a little wider and longer than the opening to be filled.
6. Place the new screening on the outside of an outside screen, or on the inside of an inside screen.
7. Use No. 4 copper carpet tacks.
8. Tack one side, starting at the center and working toward the ends. Space the tacks close together.
9. Stretch the screening as tightly as possible and tack the opposite side.
10. Tack one end without stretching.
11. Stretch the screening as tightly as possible and tack the remaining end.
12. Trim off excess screening.
13. Replace the moulding, using ¾-inch brads.

Sometimes the "drip" from copper screening causes a green stain on the painted frame. To prevent this, give the screening a coat of good spar varnish thinned with an equal amount of a mixture made by combining equal parts of linseed oil and turpentine.

To paint cheap iron wire screening use black or green screen enamel.

Take up only a small amount of paint on the brush and dab rather than stroke with it, to guard against film bridges across the mesh. Paint one side thoroughly, then paint the other side.

Wooden screen frames should be painted about once in three years. Before painting, go over the surface with fine sandpaper to remove any loose or "dead" paint. To guard against "run-off" stain use white lead for all white frames and varnish if the frames are black or dark green.

To paint metal frames use only a thin coat of varnish if they are bronze or copper. Aluminum usually will recover its brightness if rubbed with No. 00 steel wool. Steel frames should be painted with a special paint made to prevent them from rusting.

Roll-up screens mounted out of sight in the window-frame need only to be rolled out and brushed with a stiff brush. Do not neglect the side guides. Dust gathers there and must be wiped out with a cloth moistened with kerosene or gun oil. Cake paraffin rubbed down the sides of the screens will make them easier to pull up and down.

Aluminum-washed screens should not be painted. Remove dust with a soft brush.

When screens are taken down at the season's end to be stored, a little foresight will make it easy to replace them next year:

1. Gather screws, hooks and other attachments in a cloth bag and tie it to the handle of one of the doors.
2. Mark each screen for easy identification with a tack. Large-headed thumb tacks, numbered in pairs, can be bought in the "dime store." One tack is attached to the screen, the other to the door or window from which the screen was removed.

Screen doors should be equipped with a coil spring or "door closer" (page 532) so that they will close automatically without slamming.

Storm Sash

Storm sash will save its cost in fuel economy. Select a style with the same number and the same size panes of glass as there are in the windows they are to cover.

If storm sash are hung on special hook-hangers which are permanently fastened to the house they can be taken down and replaced easily. Buy fixtures guaranteed to be rust-proof and not to stain the paint. Hook the sash to the sill while in use. They can be pushed out a little for ventilation.

Another virtue of storm sash is that they prevent steamy window panes, particularly in houses with winter humidifying equipment.

Combination storm sash and screens are available both for windows and doors. The frames are permanently fixed to the house and interchangeable wire mesh and glass panels are used according to the season.

Weatherstripping

Good weatherstripping is real economy, because it has been proved that it lowers heating costs by preventing leakage of cold air into the house.

Interlocking metal strips are the most expensive, but they are also the most effective and require no care or attention. This type of stripping should be installed by experts.

Spring brass locking strips, which are also effective, can be installed by the amateur quite easily, if the manufacturer's directions are carefully followed.

Weatherstripping made of *wood and rubber* or *wood and felt* does not require expert installation, but it is important to buy the right width for the purpose:

Windows—⅝ inch wide.

Doors—sides and top—¾–1 inch wide.

Doors—bottoms—1–1¼ inches wide.

Use 1-inch brads for tacking this type of weatherstripping, setting them about 9 inches apart. Round-headed brass screws are best to use for the bottom of doors.

Zinc and rubber weather-stripping should be tacked on with closely spaced brads. Buy it in the following widths:

Windows—½ inch wide.

Doors—sides and tops—⅝ inch wide.

Doors—bottoms—¾ inch wide.

A flexible stripping, made of *cotton cord with a rubberized or canvas covering* can be bent at the corners of window or door and carried around in a continuous strip. This type of stripping should be attached with 4-ounce copper tacks, spaced 1¾ inches apart.

Felt weatherstripping is extremely cheap and must be renewed each year. It is applied with copper, brass or galvanized tacks, spaced closely. It comes in widths ranging from ½ to 1 inch.

Stripping made of *flexible rubber* is applied like felt and is more durable.

If possible, weatherstripping should be installed on the outside bottom edge of a door. However, if the door swings in, the stripping will have to be placed on the inside so that it will not interfere with closing. A strip of felt weatherstripping tacked at the bottom of bedroom doors will prevent cold air from getting into the hall during the night.

Places to Put Things

Shelves, bookshelves, kitchen shelves and closet shelves; clothes hooks, towel bars and shoe racks. Did you ever move into a place that had enough of them? A good carpenter can provide them quickly and painlessly but if you'd rather save his bill and have money for a new upholstery job on the old wing chair or a new labor-saving electric gadget for the kitchen, you can do the work.

Walls to which we commonly wish to fasten things are of plaster or wood. Plaster may be easy but you want to know what is behind it—wood lath, metal lath, plaster board, insulating board or bricks.

Plaster alone will hold light objects such as small pictures. These may be attached to a plaster wall by hooks. The hook acts as a guide for the nail which, when driven in, is held by plaster alone. Heavier objects such as shelves held by brackets, towel bars and clothes hooks must be made more secure by attaching them to the lath or to the framework of the wall itself, behind the plaster.

For wood lath you'll need screws one and a quarter to one and a half inches long that go through the plaster into the wood. In order to avoid chipping out a large piece of plaster when the screw is put in, make a small hole with a brad awl or a small nail that goes all the way through the plaster.

Usually the wood lath can be found the first time, by pointing the screw on an angle either up or down, in case the hole straight in has hit between the laths. If there is too much space between the laths and you've been unfortunate enough to find the exact center of that space, don't dig at it until there is a large crater on the surface that cannot be covered up. Move the screw either up or down about one half to one inch to find a lath directly behind your small hole.

You can tell quickly when the screw has entered the wood. It becomes harder to turn and will not back out easily. If the object you are fastening has a hole prepared and shaped for the head of the screw (called *countersunk* by the carpenter) use a flat head or oval head screws. For a straight hole a round head screw looks best.

If there is metal lath, plaster board or insulating board behind your plaster instead of wood lath, a screw will not hold in the wall unless

you are exceptionally fortunate and find a wood stud when making the hole. Instead of screws for these walls you will want a toggle bolt from the hardware store.

A brace and bit or an electric drill makes the best hole for a toggle bolt but when those tools are not available the hole made by the brad awl or small nail can be enlarged by a bigger nail until you can slip the toggle bolt through. This must be done very carefully or the plaster around the hole is apt to be chipped. Buy toggle bolts for an inch and a quarter thick wall.

Attaching towel bars or racks on bathroom tile or marble wainscoting are jobs beyond the range of the amateur. Never attempt to drill holes in tile, marble or glass. Plan to put the extra towel bars above the tile, on the wood trim or on the back of a door.

If you live in an apartment house that has glass-brick walls you can fasten shelves or brackets to them only if the builder has been thoughtful enough to leave expansion shields here and there in the masonry joints. If the shields are there you have only to find the size screw required and make your bracket fit the pattern of the shields.

By far the easiest place to secure the shelves or hooks is in wood; either in the wood trim around a door or window, the side of a kitchen cabinet or on the back of a door. Either nails or screws may be used but screws make the more secure fastening.

For corner shelves and shelves across a narrow closet, a wood strip an inch thick and about three inches wide can be nailed to the plaster with finishing nails, extending completely under the shelf, sides and back. The shelf is laid on these strips and tacked down just to prevent it from rattling or tipping.

For the shelves themselves, your lumber yard can supply you with boards in a variety of woods and widths. Ask for a one-inch board (actually it will measure only three quarters of an inch thick) of the width that you want your shelf—four, six, eight, ten or twelve inches. For a shelf over twelve inches wide it is best to use two boards. Your wood need not be of the best or entirely free of knots. Just be sure that the knots are sound ones and will not fall out.

White pine is the most common wood used for interior work. It is easy to manipulate and can be obtained at any lumber yard. Cypress, whitewood and gumwood are good, too. Greater care must be used in working with the latter ones because they are harder and more apt to split when the nail is driven into them.

Harder woods such as oak and birch are too expensive and too hard to work unless you have the tools to drill every hole before inserting a nail or screw.

If the shelf is to be used for light objects only and is not to be so long that it will sag in the middle, a quarter inch or half inch fir plywood board will be quite as satisfactory as thicker shelving and very reasonable in price. The thiner shelving will require shorter screws for the brackets.

Brackets and screws can be purchased in any hardware department. Metal brackets should be just a bit smaller than the width of your shelves. The screws must be the diameter of the holes prepared in the brackets and about three quarters of an inch long if they are to fasten the shelf to wood, or about an inch and a half long if they are to go through plaster.

In buying screws for towel bars, toothbrush holders, soap dishes or any other equipment to be attached to the wall, one must always first note the diameter of the screw required by the holes provided.

Built-in bookcases should be a part of the house but if you haven't them there are ways to achieve them. You can get the same effect and yet be able to salvage the materials when you move. Take any alcove, not over five feet long, plus adjustable metal shelf supports and long thin screws. Screw the shelf supports, two to each end, directly to the sides of the alcove. The shelves then are simply cut to the size of the alcove. Four pegs per shelf, which come with the shelf supports, are slipped into slots in the supports and the shelves laid upon them. The same equipment and plan may be used for extending bookshelves all the way to the ceiling.

CHAPTER XXXIV

PAINT

Once upon a time there were perhaps two or three different kinds of paint. Today there are literally dozens. One paint does not serve all purposes now. "A paint for every purpose" is the slogan of the paint makers. There is paint for floors and paint for chairs, paint for metal, paint for cement, paint for outdoors and for indoors. Each one comes ready-mixed with detailed instructions for its use, doing away with laborious mixing on the job.

Paint is easier to apply than it used to be, flowing from the brush without much effort on the painter's part. It still is better applied by a professional painter, but amateurs can use it readily and successfully. Marvellous new ingredients have been added which make it quick-drying, non-fading, washable. No matter what one wants to paint there is a product for the special purpose.

The full benefits of paint progress cannot be obtained unless you get the right paint for each special job. If you use casein paint for interior woodwork, for instance, it is likely to rub off on people's clothes and wear thin rapidly. This paint is meant for walls and ceilings, places which are not handled. Therefore the first rule is— Get the right paint. After this, there are four main considerations:

1. Proper preparation of the surface to be painted.
2. Wise addition of coloring matter and thinners, if necessary.
3. Proper application of the paint to the surface.
4. Adherence to correct drying times between coats.

What Is Paint?

Broadly speaking, paint includes all types of protective coatings, whether opaque or clear. Therefore such finishes as varnish, lacquer or stain properly come under the generic heading of paint.

All paints are made with two essential ingredients: the pigment and the vehicle. The pigment is a solid substance which colors the paint and hides the surface. The vehicle is the liquid, such as linseed oil, in which the pigment is suspended and spread over the surface. To these are added driers and thinners. Driers are substances which hasten

the hardening of the paint. Thinners, such as turpentine, are liquids added to make the paint spread more easily and to penetrate porous surfaces. Thinners are temporary ingredients, evaporating when the paint dries.

The best quality exterior house paints are approximately 90 per cent pigment and vehicle, only 10 per cent drier and thinner. Interior flat paints may safely contain about 20 per cent thinner, enamels approximately 30 per cent. But if a paint contains as much as 50 per cent drier and thinner, it probably is low-grade and will dry leaving a too thin film over the surface.

The reason you cannot use the same paint for floors of porches as for outside walls of the house lies in the character of the vehicle. Special materials are put into good floor paint so footsteps will not mar its surface when dry. Refined, specially treated oils are used in good exterior house paint, to make it impervious to the weather.

Ready-mixed paints made by reliable manufacturers are a better choice for amateur painters than paint mixed on the job, which is still used by some professional painters. This is because ready-mixed paints often contain materials not available for home mixing: they are more thoroughly mixed by machinery in the paint factory than they can be mixed by hand; the exact quantity of paint required can be purchased without guesswork, and if more paint is needed it can be obtained without risk of a poor match.

On pages 560–561 is a brief glossary of the types of coatings most frequently used in the average home. Their composition should be a guide to thinning, for it is essential to use the right thinners for the specific type of paint in use.

Practically any paint problem can be solved by specialized paints. We cannot hope to anticipate every special need, but a few special uses are noted herewith:

Surfaces to be Painted	*What to Ask Paint Dealer for*
Children's room walls . . .	High-gloss interior enamel or special washable flat paint (see Caution page 562)
Damp walls	Cement paint or wet wall primer and oil paint
Edges of steps and electric outlets	Luminous paint (radioactive)
Furniture	Quick-drying enamel or varnish
Inside of ovens	Special heat-resistant metallic paint

Kinds of Paint

Classification	Basic Composition	Type of Surface	Thin with
Bituminous paint	Asphalt, tar, asbestos	Below grade waterproofing or as roof coating	Petroleum spirits
Brick paint. (*See also* Cement paint)	Usual house paint pigments, special type vehicle or varnish	Brick siding, chimneys or interior walls. Also other exterior masonry	Turpentine, petroleum spirits
Calcimine	Whiting and glue	Basements, ceilings and other places where durability and water resistance do not count	Water
Casein and Emulsified Resin paints	Usual paint pigments and casein or resin	Exterior and interior plaster and masonry	Water
Cement paint	Portland cement and small amounts of modifying ingredients	Exterior and interior brick and other masonry surfaces including damp areas	Water
Concrete floor paint	Same as porch and deck enamel except with alkali-resistant pigments, alkali-resistant varnish or special types of vehicles	Concrete and cement floors when dry and aged; special neutralizer first if concrete still green	Turpentine, petroleum spirits, special thinners
Exterior enamel	Pigments and varnish	Furniture, shutters, doors and woodwork, especially where quick drying is essential	Turpentine or petroleum spirits
Exterior house paint	Linseed or other drying oil, varnish, the usual white pigments, tinting pigments	All exposed wood or metal. When reinforced with spar varnish, garden furniture and hand rails.	Turpentine or petroleum spirits
Interior enamel	Lithopone, titanium pigments, varnish	Walls and woodwork in kitchens, baths, laundries	Turpentine or petroleum spirits
Interior wall and trim paint (flat, semi-gloss, eggshell)	Lithopone, titanium pigments, varnish	Interior wall surfaces; semi-gloss and eggshell for woodwork	Turpentine or petroleum spirits

Kinds of Paint—(*continued*)

Classification	Basic Composition	Type of Surface	Thin with
Lacquer	Usual lacquer ingredients modified with slowly evaporating thinners or solvents	Clear, for floors. In color for furniture and miscellaneous small articles	Lacquer thinner
Metal primers	Zinc dust, zinc chromate, lead chromate, red lead, blue lead, linseed oil, varnish	As an undercoat for interior or exterior metal work where resistance to corrosion is a factor	Turpentine or petroleum spirits
Plastic paint	Pigments, oil, varnish, glue, plaster of Paris	Interior surfaces where textured effect desired	Turpentine or petroleum spirits or, in some cases, water
Porch and deck enamel	Usual pigments, floor varnish	Porch floors, furniture, all surfaces requiring hard, abrasion-resistant finish which does not chalk easily. (*See also* Spar varnish)	Turpentine or petroleum spirits
Shellac, sometimes called Shellac-Varnish	Shellac resin dissolved in alcohol	Floors or as a sealer for new wood before painting, or as a clear protective finish for wallpaper	Alcohol
Shingle stains	Coal-tar creosote, linseed oil, pigments	Roofing shingles or siding	Turpentine or petroleum spirits
Spar varnish	Resins, oils, thinners	Outdoor furniture, porch floors, all wood or metal requiring a clear finish, such as kitchen drainboards	Turpentine or petroleum spirits
Spirit varnish	Resins, thinners	Interior woodwork	Turpentine, petroleum spirits or alcohol
Stains (spirit)	Dyestuffs, extremely fine pigments, spirits or oil. Some contain water	Floors and interior wood trim; also wall panels and furniture	Turpentine, petroleum spirits, water or alcohol
Varnish	Drying oils, resins, thinners	Floors, interior wood trim and furniture	Turpentine or petroleum spirits
Waterproofing compounds	Waxes, oils, varnishes	Colorless coating for exterior or interior masonry surfaces	Turpentine or petroleum spirits
Whitewash	Slaked lime, water	Basements not used as playrooms, barns, chicken houses, fences	Water

Surfaces to be Painted	*What to Ask Paint Dealer for*
Non-slip floors	Special abrasive paint
Outdoor iron grillwork	Metal primer and exterior house paint
Radiators	Flat interior paint
Screens	Lacquer, spar varnish, or screen enamel
Walls back of stoves	Fire-resistant paint (no paint actually fireproofs wood, however)

Caution: Be careful not to use lead paints on children's toys, nursery furniture or walls, as poisoning can result from their chewing or licking these surfaces. Chrome-yellow paint always contains lead or chromate, which may be as toxic as lead compounds. Green paints sometimes contain these ingredients.

Lead paint should be handled with special care. This does not mean care in handling the paint alone, for lead paint on the hands is less dangerous than lead dust in the air. The most dangerous lead poisoning is that which results from breathing air containing toxic amounts of lead dust. Lead dust can get into the air by various means. If lead paint drops on the floor and people walk on it, the paint may become pulverized and be disseminated into the air. If overalls are not washed often enough, they can become saturated with lead dust, and every movement can send the dust into the air. Scraping or sandpapering lead-painted surfaces produces lead dust. Good housekeeping and cleanliness can eliminate the hazards of using any poisonous material.

Inhalation of the fumes while applying a paint containing benzol or similar solvents may be injurious as well. Good ventilation is necessary during any kind of painting.

Preparation of the Surface

No matter how fine the paint and how carefully applied, the result will be unsatisfactory unless the surface is properly prepared for painting. More paint failures can be traced to carelessness or laziness in surface treatment before painting than to any other one thing. It may be wearisome work to dust, wash, brush or scrape a surface which is to be painted, but unless it is done thoroughly the paint film will not adhere closely and stay uncracked and unblistered for its full term of life.

The ideal surface for paint is smooth, clean and uniform. The first coat of paint is called a primer and is either the ready-mixed paint, thinned, or a special primer. If it is a new surface, it may need a special treatment before the paint is applied, such as the application of a "size" or transparent coating which seals porous surfaces.

Here is a chart to help you know what to do before you begin to paint:

Material	*What to Do First*
New wood	Dust off loose dirt, remove foreign matter such as mortar, plaster or cement with a scraper. For porous wood used inside a house, apply filler, then prime coat. For close-grained wood in interiors and for all exterior wood, simply apply prime coat. Shellac knots. Fill nail holes and loose joints after priming coat is dry.
Painted wood	Dust, remove peeling paint with wire brush. A blowtorch may be used by professional painter to soften old paint so it can be scraped. *Caution:* blowtorches should not be used by amateurs.
Varnished or enamelled wood	If the surface is marred, use varnish remover and then rub with sandpaper or steel wool. High-gloss surfaces in good condition frequently need only to be washed with soap and water, sponged with clear water.
Whitewashed wood	Remove old whitewash with a scrubbing brush and clear water.
Cresote-stained shingles	Dust thoroughly with dry brush. Never apply paint over stained shingles until they have weathered for several years.
Bituminous-painted surfaces	Coat with shellac before painting with oil paint. Aluminum paint or emulsified resin paint also may be effective. No preparation is needed when bituminous paint is applied over old bituminous paint or any new surface. If old coat is soft, sprinkle sand on surface before painting to make the new coat cling.

Material	*What to Do First*
New brick or concrete	Use special undercoater to seal pores and counteract alkalinity. If surface exposed to air for a year, alkalinity is not a factor.
Painted brick or concrete	Dry-brush thoroughly, remove all old paint with scraper or wire brush.
New plaster	Apply a size, which is a glue-like material insoluble in water, before using wallpaper or paint. Especially necessary when using oil paint.
Oil-painted plaster	Wash with solution of washing soda and warm water, rinsing with clear water to remove stains. Apply shellac, varnish or aluminum paint to the remaining stains. Cut out and fill with patching plaster all cracks and holes; shellac patches or paint them with thinned flat oil paint.
Calcimined or whitewashed	Wash old coat off thoroughly with solution of washing soda and warm water, using strong scrubbing brush. No paints adhere to these old coatings.
Casein-painted plaster	No trouble painting over casein.
Metal	Use wire brush, sandpaper or steel wool to remove all rust and scale. Deep rust spots may be heated with blowtorch, by professional, to remove moisture.
Galvanized iron	If exposed to weather for a year, treat like other metals. If new, treat with a proprietary etching solution or with blue vitriol solution. Electrolytic galvanized iron does not require any pre-treatment.

Thinning

Paint which stands in a can tends to thicken, and solid material to settle to the bottom, especially if the container is imperfectly closed or only partially full. Therefore thinner often is required before the paint can be spread smoothly and easily.

It is safest always to use the same thinner used by the manufacturer of the paint. (See chart, pages 560–561.) This information is usually

printed on the label of the paint can. If by chance the type of thinner is not known, the safest procedure is to use the most powerful solvent available and make trial thinnings with small quantities to see if the thinned paint remains uniform.

Ordinary paints and varnishes may be thinned with turpentine or petroleum spirits; shellac requires alcohol; lacquer requires butyl acetate or ethyl acetate sold under the name of lacquer thinner; caseins, calcimines and other water paints are thinned with water. Amateurs should not use solvents which are highly flammable.

Turpentine is the material usually preferred for thinning ordinary paints, but petroleum spirits are cheaper and usually quite satisfactory.

Changing Colors

About all the mixing that is done nowadays by laymen comes under the heading of tinting, since the paint used usually is ready-mixed for application. But there may be a particular color you want which does not come out of the can exactly the shade desired. It is not difficult to create the right shade, if you know a few color-mixing rules:

1. Use the right kind of coloring matter: pigments ground in oil for oil paints, dry colors, paste or liquid colors manufactured especially for casein paints, and dry colors for cement paints. For light shades start with white and add color sparingly. For many intermediate shades, two or three ready-mixed colors may be blended, but only a little at a time until the effect is tested.

2. Mix a little paint at a time in a small can or cup—a paper drinking cup is good for sample color mixing—until you achieve the shade you are seeking. Then mix a larger batch in a metal can to match the sample.

3. Stir thoroughly so that the last streak of color is absorbed. Paint in small quantities may be shaken in the can, with the lid tightly closed. Larger quantities should be stirred thoroughly with a stick or glass mixing rod. Make sure no lumps are left in the bottom of the can.

4. Color enough paint at one time to cover the whole surface. Tell your paint dealer the size of your room or piece of furniture and he will estimate how much paint you need.

5. Keep the paint can tightly closed between applications, if you cannot do the whole job at once, and be sure to stir and thin the paint each time you come back to it. (For thinning instructions, see page 564.)

6. Know something about creating colors. It is impossible for the amateur to predict just how any combination of colors will turn out, since the nuances of tinting are a matter for the individual eye. Here are a few examples of color-making, as given by the National Paint, Lacquer and Varnish Association. They are not the only way the colors can be made, but they may serve as a guide:

(*a*) Old rose . . . . . Tint white paint with a little crimson madder; if it is too lavender, add a little medium blue.

(*b*) Coral . . . . . Chrome yellow and a small quantity of vermilion added to white.

(*c*) Cool blue . . . . . Cobalt blue, flavored with medium chrome green in the proportion of eight parts cobalt to one part green. With this blend one-half part English vermilion, then add white until a pale tint of blue is obtained.

(*d*) Chartreuse . . . . . Two-thirds white paint mixed with one-third lemon yellow into which chrome green has been mixed in the percentage of one part to ten.

(*e*) Jade green . . . . . White paint colored with chrome green, grayed with a bit of Venetian red and further cooled by a dab of Prussian blue.

(*f*) Lively brown . . . . To avoid a muddy tone use burnt umber for the base, then if reddish brown is preferred add Venetian red until the desired depth of color is obtained.

(*g*) Yellowish brown . . . Mix chrome yellow and burnt umber with white.

(*h*) Cinnamon brown . . Mix raw sienna, golden ochre and white with proportionately more sienna than ochre.

(*i*) Grayed colors . . . . Add a little of the complementary color to the ready-mixed color, such as red to green, orange to blue, violet to yellow.

(*j*) Softened colors . . . Add a mere dash of the tint desired to soften a ready-mixed color which seems too strong, such as a bit of yellow to green, a dash of violet to gray.

Styling with Color: Paint styling has recently become an art. A coat of paint, properly selected and applied, can be an effective modernization device for a house. Careful choice of shades can bring effects not thought possible only a few years ago. The Council for Paint Styling of the National Paint, Varnish and Lacquer Association spent several years in studying the effects of color both inside and outside a house, and found that by following certain general rules one can soften lines, create or diminish size, accentuate sunshine and shadow with paint. The suggestions should be followed only if their effect is pleasing to the individual family living in the house, of course:

If the house is too high, paint the roof a dark color. Paint the shutters of the upper story the same color as the roof, the remaining shutters the same color as the body of the house.

If the house has a roof line cut up with too many gables, paint the roof, dormers, stacks and chimneys all a dark color. Paint front door and shutters on the lower floor conspicuously.

If dormers make a small house look smaller, paint their faces the color of the side walls to make the house itself look larger.

If dormers make the house look too tall, paint them the same dark color as the roof, so they blend in with the roof.

If chimneys seem too conspicuous, paint them the same color as the body of the house.

If window openings are of different sizes, paint their trim the same color as the body of the house. Or remove smaller shutters and leave only those of larger and more uniform size.

If hallways are dark, use bright cheerful colors such as yellow.

Long narrow living rooms can be made to look wider by using a dark color on the walls at the narrow ends and a lighter color on the other walls and ceiling.

Square, uninteresting living rooms may have one wall of a different color or pattern, to create a focal point of interest. This is, however, a matter of individual taste.

Living room ceilings which seem too high may be painted a darker color than the side walls, to bring down the ceiling.

Undersized living rooms look more spacious when painted with a light single color on all walls and ceilings.

A dining room visible from living room should be painted a color which harmonizes closely with that in the living room.

Use bright colors in the kitchen, one color if it is a small kitchen, two tones of the same color if large. If the breakfast nook is part of the kitchen, paint it the same color. If it is separate, use a contrasting color and apply a design with stencils or decalcomanias, to give an intimate touch.

Paint bedrooms so that they will look their best when the sun rises in the morning—brightly, if there is not much sun, more subtly if the sun streams into the room.

Paint bathrooms so that they will look well in artificial light, in which they are most used. Use warm colors in the shower recess.

Use startling colors in the recreation room or playroom.

Drying Times and Number of Coats

The length of time allowed for paint to dry varies widely with the kind of paint and the number of coats used. There are quick-drying enamels which dry to touch in 1 to 4 hours, outside house paints which require 72 hours or longer between coats. Some are used in single coats and some in as many as three coats. Always follow the manufacturer's instructions regarding drying times and number of coats. A good job can be spoiled by applying a second coat over a first which has not thoroughly dried. A paint not sold as a one-coat paint cannot be expected to cover completely with one coat.

Type of Paint	*Number of Coats Usually Required*	*Drying Time*
Outside oil paint	2 or 3	72 hours or more
Inside flat, semi-gloss and egg-shell paint	2 or 3	24 hours
Inside enamel	1 finish coat over undercoats	4 hours
Inside casein	2	12 hours
Metallic paint (aluminum)	1	12 hours
Floor enamel	2	24 hours

Type of Paint	*Number of Coats Usually Required*	*Drying Time*
Varnish	1	12 to 24 hours
Spirit varnish	1	4 to 24 hours
Shellac	1	4 to 24 hours
Cement base paints	1 or 2	12 to 24 hours (slower the better)
Calcimine	1	12 hours (in damp weather 24)

How to Paint

The technique of painting is an easily acquired one, depending more upon use of good paint, good brushes and careful observance of instructions on the paint can than upon the manner in which the brush is wielded. In general, smooth even strokes are the best, strokes which do not attempt to take in too much space at once and which avoid heavy overlapping. Don't try to go over half-dry paint, but finish each section of the surface before you go on to the next section.

Here are a few don'ts which help:

Don'ts for Amateur Painters

1. Don't forget to read the label on the paint can or to follow instructions to the letter.

2. Don't do outside work in wet weather—immediately after a storm or heavy dew, or too early in the spring before wood has dried out.

3. Don't paint in very cold weather, as low temperature thickens paint films and makes them more liable to cracking.

4. Don't apply paint to a very hot surface—blisters may result.

5. Don't try to cover the surface all at once with one heavy coat; several thin coats are better.

6. Don't paint over undercoats not thoroughly dry.

7. Don't putty up holes or imperfections until after the priming coat has been applied.

8. Don't neglect proper preparation of surfaces.

9. Don't use anything but good brushes and the right thinners.

10. Don't waste time and money by using poor paint in a mistaken effort toward economy.

Painting Equipment

To achieve the best results and, in the long run, to save time and money, it is necessary to have all the essential equipment before you start to paint. This means more than paint and thinner, discussed above. It includes paint brushes of various sizes and types, paint cans with tight-fitting lids, sponges, rags, sandpaper or steel wool, scrubbing brushes, pails and plenty of newspaper to spread over other surfaces to protect them.

Paint Brushes: There are different sorts of brushes for paint, varnish and shellac, varying in shape, size, quality of bristles and setting. Don't handicap yourself with the wrong brush or an inferior one.

(*a*) *Kind of Brush:* The rule for brushes is much the same as for paint—a brush for every purpose. Special varnish brushes, calcimine brushes, roof-painting brushes, whitewash brushes, shellac brushes, soft brushes for fine varnish and enamel, a special pencilling brush or brick liner for brickwork, are all part of the equipment, depending on the job.

Type of Surface	*Kind of Brush*
Walls	Large flat brush
Woodwork	Small flat brush
Floors	Varnish brush
Mouldings, narrow trim, windows	Small varnish and sash tool
Pipes, railings, etc.	Oval brush
Furniture	Enamel or varnish brush
Roofs and rough surfaces	Stubby, cheap brush as job is hard on a good brush

(*b*) *Width and length of bristles:* Select a brush with sufficient capacity, as one which is insufficient requires frequent dipping and the surface is alternately flooded and starved, resulting in an uneven film. A flat brush 4 inches wide generally is used for large surfaces, but a 3½-inch brush is considered better for beginners. The bristles in a 4-inch brush should not be more than 4½ inches long, except for experienced painters. For painting trim and small surfaces, brush should be from 2 to 2½ inches wide with bristles 3 to 3¼ inches long. Oval brushes shaped like an artist's paint brush and used for rounded surfaces should be 1 to 1½ inches wide at the widest point, with bristles about 2 inches long.

(*c*) *Quality of the stock:* The Federal Trade Commission requires

that brushes not made of pure bristles be stamped with name of material used, such as "bristle and horsehair." Most manufacturers also stamp "genuine bristle" on brushes which contain pure bristles. It pays to buy brushes with genuine bristles rather than horsehair or vegetable fiber stocks. They last longer and spread the paint more reliably.

A paint brush can be tested by holding it close to the ear and swishing the stock with the fingers—bristles make a livelier vibration than fiber—but this is not a wholly reliable test. The feel of the bristles, how they spring, also tells the story—fiber feels deader than genuine bristles. Examining the ends probably is the best test, for fiber splays out while genuine bristles tend to thin to a point. But some horsehair is flagged artificially at end, so look for the stamp on the handle to be sure of what you are getting.

(*d*) *Setting of Brush:* To test the way in which the bristles are set into the brush, hold it up between the eye and the light. Run your hand back and forth sharply over the bristles. Some bristles will loosen and fly out, of course, perhaps five or six, for it is commercially impossible to remove every individual bristle that is not caught in the setting. But excessive shedding means inferior setting. The bending process is advisable before using the brush so the loose bristles will not come off in the paint film.

Most brushes are set in vulcanized rubber or bakelite, except artists' brushes which are set in brushmaker's cement, a form of shellac that dissolves in alcohol. The words "set in rubber" generally appear on the ferrule. Don't use a brush set in brushmaker's cement for household painting.

(*e*) *Quality of the Binding:* Good brushes are bound with leather or with metal, firmly fastened to hold the stock in place. If the binding is metal, choose a rust-resistant metal or a metal which has been rendered rust-resistant by an anti-rust plating such as nickeled steel or nickeled tin. Rust on the binder may discolor the paint.

Care of Brushes: All brushes should be cleaned immediately after use. This undoubtedly is the most unpleasant of all tasks connected with painting, because it comes after the paint has been applied and is merely insurance toward good painting with the same brushes next time. But if it is not done, it will be much harder to clean the brushes on which paint has dried.

The most satisfactory way to care for brushes is to rinse them fairly well in thinner, as soon as the painting is finished, wipe off as much of the paint and thinner as possible, then place them in a can contain-

ing pure raw linseed oil. Raw oil is used because it has no tendency to skin over. Brushes can be kept in this manner an indefinite period of time. It is a good way to leave brushes overnight.

It is not difficult to suspend the brushes in the linseed oil. Just drill a hole in the brush handles at equal distances from the bristle edge of the ferrule; then all ferrules, when suspended on a rod lying across the top of the can containing the linseed oil, will line up so the level of the oil comes up to the ferrule of each brush. This insures against some ferrules being literally covered and filled with oil, while others are at the correct depth of ⅛ inch above the bristle-ferrule line. The can must be deep enough to insure a distance of at least two inches between the bristle ends and the bottom of the can.

Brushes on which paint has been allowed to dry are much harder to clean. They should be soaked for a day in paint and varnish remover containing a minimum of wax; when soft, flick out as much of the softened paint as possible and rinse in thinner. Then wash with warm water and copious soapsuds. Never use lye or caustic soda—that ruins the bristles.

After cleaning, and while the brush still is damp, comb and form the bristles so that they lie flat. Store brushes clean and dry, wrapped in newspaper and laid flat. Shape the paper wrapper like the usual paper wrapper in which a new paint brush comes.

A few don'ts in the care of paint brushes are in order:

1. Don't ever set a brush in water to keep it soft. Even if the bristles are coated with paint, they will absorb water, become soft and moppy and swell, with the result that their working quality is impaired, their ferrules may become rusted or ruptured, their natural form will not be retained.

2. Don't ever clean brushes which have become hard with paint near flames, lit cigarettes or in closed places. This because paint or varnish remover and many thinners are flammable.

3. Don't forget to wipe out excess linseed oil when starting work with a brush that has been suspended in the oil, and rinsing it once in a little thinner before beginning work.

Paint Sprayers: Motorized spray guns make it possible to paint a wall in about one-third the time it takes by brushing. Sprayers send the paint out in a fine spray, covering surfaces evenly and smoothly. Some of them can be attached to a vacuum cleaner; others are self-contained portable units in strong metal cases with small motors. They

Photograph by William H. Zerbe

A well organized paint storage cabinet.

may be used with liquid wax and insecticides as well, providing the containers are thoroughly cleaned between uses.

Paint Storage: It is a good idea to have a small cabinet somewhere in your house—pantry, back porch, cellar or garage—devoted to painting equipment. If you cannot spare the space for a whole paint cabinet, set aside a shelf or shelves somewhere not too close to food-storage space or house-heating equipment, and keep all your equipment together there. Paint-stained rags always should be kept in closely covered metal containers to guard against possible fire hazards. Left-over paint should be sealed tightly, then labelled with the name of the room where it was used. This may mean an easy, quick touch-up in the future instead of a whole new paint job. (See illustration of ideal paint cabinet above.)

Adjuncts to Painting

A number of special products connected with painting might well be kept on the paint shelves of your utility cabinet. You will find that they are items which serve well in protecting and beautifying a home:

Product	*Use*
Caulking compound or putty	For filling nail holes, cracks in plaster, openings around doors and windows.
Crack filler	For filling cracks or gouged places in floors, furniture, woodwork. May be colored before setting by adding dry color to the mix, so the crack matches the rest of the surface.
Glue	For repairing furniture and mouldings, replacing loosened edges of wallpaper.
Paint cleaner	For cleaning exterior and interior painted walls and other painted surfaces.
Putty knife	For applying caulking compound and crack filler; for scraping off old paint films.
Sandpaper	For refinishing wood surfaces, or roughening old paint or varnish coats in preparation for new coats.
Wallpaper cleaner	For removing soil from wallpaper.

Special Waterproofing Problems

Leaky Basements: The problem of the leaky basement is widespread. Many people hope to solve it by painting their cellar walls and floors, but many are doomed to disappointment. For paint, although offering some protection against moisture, will not always stand up against actual leakage.

There are special coatings made for the purpose which often do the trick. They are not usually considered as efficient protection as the installation of drainage tile or clay pipes around the outside of the building, to carry off ground water, or the installation of a membrane waterproofing, made of felt saturated with asphaltic material that completely covers the outside foundation walls and goes under the cellar floor. But these aforementioned methods are pretty generally confined to new construction.

If you have dampness or actual leakage in the basement of your present house, you can have skilled workmen do any one of these things:

1. Install a sump pump, which is placed in a pit below the level of the cellar floor and removes water entering the cellar.

2. Install a cement plaster coat on the inside of the cellar, covering the floor and the interior walls. Allow for expansion and contraction where floor and walls meet. The cement should be mixed with an integral waterproofer, a chemical which acts to hold back the moisture in the wall.

3. Apply a metallic waterproofer on the inner side of the foundation walls. This should be applied in from two to five brush coats. If done by skilled and careful workmen, it is extremely effective. The metallic waterproofing may also be applied to the floor, but a one-inch thickness of floor topping must be laid over it.

4. Apply a special alkali-resisting paint to walls and floors. It is generally effective in preventing moisture in masonry from seeping through, although no film, even of high tensile strength, can withstand great hydrostatic pressure. The paint will protect up to the point of bursting of the film. Two coats will give better protection than one, naturally. Being colorful, besides being useful, this paint makes a smooth interior finish for a basement used as a playroom.

Damp Chimneys: Because fuel in its combustion gives off moisture, chimneys often are susceptible to moisture, particularly when outdoor temperatures are low enough to cause condensation. One way of guarding against this condition is to treat the outside and inside of the chimney with a transparent waterproofing compound. It may be applied easily to the outside; for the inside allow it to run down the smoke hole, saturating the inner walls. This loosens the soot and tends to make the inside of the flue impervious to moisture. A second coat should be applied when the first has dried. Water-spotted room walls near the chimney may be avoided by this means. If you have noticed any signs of water-spotting, it is well also to apply two coats of another compound called damp-proofer to the interior house walls near the chimney, before repapering or repainting, however.

Sweating Inside Walls: If there are actual leaks from the outside they should, of course, be found and the cracks repaired. If the plaster seems to pick up moisture from damp air, however, the use of a wet wall primer, a chemical solution which neutralizes unslaked lime in the plaster, sometimes is effective. The wall must be scraped down to bare plaster, with all paper and paint removed, before the solution is applied. Sufficient time must be allowed after application before refinishing the wall.

Financing a Paint Job

Even though you are a good amateur painter, you may find it wiser to hire a professional for any big paint job around your home. This is not only insurance against poor workmanship, but the work is done faster, which means fewer days of mess and nuisance.

Formerly many property owners felt they should delay painting until they had the required sum in hand with which to finance the work. As a result, homes often were unprotected from the weather until they had depreciated noticeably, and the cost of repairs was greatly increased. This is no longer necessary, as a pay-out-of-income system has become popular.

It is a simple matter to have paint jobs financed, like other home improvements, through local banks, financing organizations, painters and paint dealers. If your house needs painting, don't let it go too long. Investigate time payments. You may save yourself money by protecting your house from deterioration while paying for the protection on the installment plan.

INDEX

INDEX

PAGE

Absorbents 315
effect on dyes 315
effect on fibers 315
how to use 317
kinds 315
purpose 315
Acetate rayon 281
Accident compensation, household employees 112
Acoustic tile ceilings, care of . . 167
"Add-on" contracts 82
Adhesive tape stains, removing . 321
Administration of medicine . . 108
Adolescents, rooms for 59
Advancement, budget 75
Advertisements, household employment 115
Age, household employees . . . 120
Agencies, household employment . 114
Agreement, working, for household employees 111–118
Air conditioning 435–440
circulation 436
comfort devices 440
attic fans 440
kitchen ventilating fans . . 440
cooling and dehumidification 439–440
caution 440
mediums 439–440
ice 439
mechanical refrigeration 439–440
well water 439
humidification 436–439
equipment 437–439
basement units 438
forced air heating systems 438
humidifying radiators . . 438
portable humidifiers . . . 439
radiator heating systems . 438
room units 438
warm air heating systems 437–438
health aspects 436
maximum allowable 437
purification 436
Aircooled fabrics 286
Alcohol stains on furniture . . 118
Aluminum 208–209
alloy, care of 209
cooking utensils, care of . . 208–209
foil 32

Aluminum—*Continued* PAGE
hammered, care of 209
spun, care of 208
American Gas Association Laboratories 489
seal of approval 489
American Red Cross . . . . .
"First Aid Text Book" . . . 104
"Home Hygiene and Care of the Sick" 107
Amperes 472
Andirons, care of 206
Animal-proof closet 383
Antidotes for poisons 100
Ants 350–353
control 351–352
kinds and habits 351
Apartment
essentials of good floor plan . 4
renting (check list) 3
Applicator, floor wax, use and care 133
Appliqued
borders and designs 342
monograms 340–342
Approximate weights of dry clothes 270–271
Areas, work surface, kitchen . . 27
Argyrol stains, removing . . . 321
Ash disposal 430
Asphalt tile floors, care of . . . 151
Asphyxiation 101
Assets, budget 78
Attic
fans 440
lighting 516
Automatic refrigerator, care of . 248
Average woman's "reach" . . . 22
Awnings, care of 172

Baby clothes, washing 296
Baby's room 49
cleaning
daily 242
weekly 242–243
Balconies, safety 96
Banking fires 425
Baseboards, care of 168
Basements
lighting 516
waterproofing 575
Basic starch formula 266–267
Basket, cleaning 142

INDEX

PAGE

Bathroom
bathtub
care of 243–244
safety 96
cleaning 246
closing the house 407
drain traps, care of 244, 464
equipment, cleaning 243–244
fixtures 456–460
care of 244; 459–461
selection 460
types 459
hampers, care of 246
lighting 514
metal fixtures, care of 244
planning 461–464
general principles 461–462
selection of fixtures . . . 462–464
six basic floor plans . . . 461, 463
shower
curtains, care of 245
stalls, care of 245
storage space 70
toilet bowl, care of 244
wash bowl, care of 243–244
Bathtub
care of 243–244
iron rust stains 244
"ring" 244
safety 96
soap scum deposit 244
selection of 462
Beating rugs 175
Bedbugs
control 353–354
habits 353–354
sprays 347
Bed
frames, care of 235
cleaning 235
enamelled 235
painted 235
varnished 235
waxed 235
dusting 235
making 239
"hospital" corners 239
springs, care of. 235
boxed 235
coil or link 235
Bedding, care of 238–239
airing 238
comfortables, care of . . . 238–239
laundering
blankets 298
mattress pads 297

Bedding—*Continued* PAGE
quilts 300
packing 404
Bedrooms
daily cleaning 239–240
closing the house 407–410
lighting 514
seasonal cleaning 241–242
weekly cleaning 240–241
Bedspreads, care of 300
candlewick 300
chenille 300
ironing 300
rayon 300
silk 300
washing 300
Berry stains, removing 322
Bituminous coal 425–430
Blankets, washing 298–300
Bleaches, stain removal . . . 315–316
effect on
dyes 315–316
fibers 315–316
kinds 315–316
methods for using . . . 315–316
purpose 315–316
Bleaching
delicate fabrics 265
furniture 538
rayon fabrics 265
silk fabrics 265
spots and stains 317–319
white cottons and linens . . . 265
Blinds, Venetian, care of . . . 171
Blood stains, removing 321
Bloom or fog on wood furniture . 189
Blouses
ironing 275
starching 265
Blowfly 362
Bluing 265
purpose 265
types 265
use 265
Bolster covers 339–340
decorator finishes 340
fabric suggestions 340
Bookcases
building 557
children's 57–58
Book lice (psocids) 355
control 355
habits 355
Books, care of 202–205
binding, care of 205–206
children's 56–58
dampness 202
dry air 202

Books, care of—*Continued* PAGE
dusting 203
insect damage 355, 381
mildew 205
new books, how to open . . . 203
on shelves 202
packing 402
repairs 203–205
holes in center of pages . . 204
loose pages 204
lost corners 204
torn pages 204–205
Bookshelves, putting up . . . 555–557
Borax 257
Boric acid rinse for diapers . . 296
Borrowing money 83–86
before signing contract . . . 83
building and loan companies . . 84
co-makers 84
commercial banks 84
cooperative banks 84
credit unions 84
federal loan banks 84
finance companies 85
illegal lenders 85
industrial banks 85
pawn brokers 85
precautions 83, 86
security 83, 84
Bottle fly 362
Bowl method, stain removal . . 317–319
Brass, care of 209–210
lacquering 209
polishing 209
bright finish 210
soft dull finish 210
warm, antique finish 210
Breakfast nooks
lighting 514
space requirements 20
Brick fireplaces, care of 206
Broilers, care of 249, 250
electric 250
gas 249
Bronze, care of 210
Brooms, care of 133
Brushes, care of
household 134, 136
paint 570–572
Budgets 71–86
advancement 75
assets 78
borrowing money 83–86
clothing 74
emergency reserve 75
fixed expenses 72
flexible expenses 72
food 72–74

Budgets—*Continued* PAGE
form for 76–77
installment buying 80–83
inventory 79
liabilities 78
life insurance 75
percentage patterns 79
personal allowances 78
record system 76–78
reward system 71, 72
savings and investments . . . 75
Buffalo bugs or "moths . . . 355–357
Building and loan companies . . 84
Built-in lighting 516
Bureau drawers
moth prevention 376
packing 403
storage 67
Burner bowls, kerosene ranges, care of 251
Burners, gas ranges, care of . 249–250
Burns
and scalds, avoiding 98
on furniture 189
Business center, kitchen 34
Butler's pantry 20
storage 20
uses 20
Butter stains, removing 321

Calcimine ceilings 166–167
Camphor, spirits of, for furniture 188
Candle
sticks, silver, care of 214
wax on wood furniture . . . 189
wax stains, removing 321
Candles, safety measures . . . 91
Cane furniture, care of 194
Carbon arc sunlamps, care of . . 200
Careless smoking, cause of fire . . 89
Carpet
beetles 355–357
control 356
habits 356
types 355–356
sweepers 132–133
care 133
use 132–133
Carpeting for stairs, care of . . 181
Carpets, *see* Rugs
Cast iron, care of 211–212
Causes of fire 87–93
Cedar chests 376
Ceiling fixtures 508
Ceilings, care of
acoustic tile 167
non-perforated 167
perforated 167

Ceilings, care of—*Continued* PAGE
calcimined 166–167
dusting 166
kitchen 30
painted 167
papered 167
white washed 166–167
wood-panelled 167
Cellophane 32
on lampshades 196
Celluloid, safety measures . . . 93
Cement (concrete) floors, care of 156
Centipedes 357
control 357
habits 357
Ceramic tile
floors, care of 153
walls, care of 165
Cesspools 496–497
Chamois, care of 136
Check lists
cleaning equipment 140–142
closing the house
summer 408–409
winter 409–410
convenient kitchen 35–37
dishwashing equipment . . . 218
laundry equipment 255–256
schedules, housekeeping . . . 13
stain removal equipment . . . 314
what to look for
when you rent an apartment . 3
when you buy a house . . . 4
to remodel 6
work centers, kitchen, equipment 16, 17
"Checked" or crackled varnish . . 189
Cheese skipper 380
control 380
habits 380
Chewing gum stains, removing . 321
Child care, training household employee 125
Children
in the kitchen 32
safety 103
Children's
clothes, starching 267
rooms
adolescents 59
baby 49
lighting 61, 514
small children 50
storage 53–59
Chimneys
care of 409, 450
safety measures 88
waterproofing 575

PAGE
China
care of 223
packing 400–401
Chintz lamp shades, care of . . 198
Chocolate stains, removing . . . 321
Choosing a household employee 114–117
interviews 115
sources 114
Christmas decorations, safety measures 92
Chromium
care of 210
furniture, care of 194
Circuit breakers 472, 480
Circuits, electric 470
Clay tile floors, care of 153
Cleaning—see name of object to be cleaned, also Housecleaning
Climbing, safety measures . . . 96
Closets
animal-proof 383
cedar-lined 376
clothes
auxiliary equipment 66
children's 53–55
decoration 63
dimensions 66
floors 66
lighting 64, 514
ventilation 64
walls 66
fumigation of 378
shelves 555–557
Closing the house 405–410
for the summer 405–409
bathrooms 407
bedrooms 407–408
check list 408–409
dining room 406
heating system 408
kitchen . . . . . , 405–406
living room 406–407
plumbing system 408
for the winter 409–410
awnings 409
check list 409–410
chimney 409
heating system 409
plumbing system 409
screens 409
Clothery 42
Clothing
budget 74
moth-proof storage 371
on fire, what to do 94
packing 404
Cloths, cleaning, care of . . . 136–137

PAGE

Cluster fly 362
Coal 425–430
  anthracite 425–430
    characteristics 425
    sizes 426
    use
      ash disposal 430
      banking the fire 425
      saving fuel 432–435
      starting the fire 428
      storage 429–430
  bituminous 425–430
    characteristics 425
    use 425
      ash disposal 430
      banking the fire 425
      saving fuel 432–435
      starting the fire 428
      storage 429–430
  hardness, table of 426–427
  ranges, care of 251
Coated
  fabric wall coverings 164
  walls, care of 164
Cobwebs, removing from walls 157–158
Cockroaches 357–359
  control 358
  habits 357–358
  types 357
Cocoa, stains, removing 321
Cod-liver oil stains, removing . . 321
Coffee
  makers, electric 391–392
  recipe for 391–392
  stains, removing 322
Coke
  characteristics 425
  sizes 427
  use
    ash disposal 430
    banking the fire 425
    saving fuel 432–435
    starting the fire 428
    storage 429–430
  varieties 427
Cold storage, moth prevention 378–379
Collars and cuffs, starching . . . 267
Color fastness, test for 287
Colored fabrics, laundering . . . 287
Colors, fugitive 287–288
Co-makers 84
Comforters, care of . . 238–239, 300
Commercial
  agencies, household employment 114
  banks 84
Community councils on household
    employment 113

PAGE

Composition
  floors, care of 151
  tile floors, care of 153
  walls, care of 165
  work surfaces, care of 31
Concrete (cement) floors . . . 156
Conditioning leather furniture . . 193
Conditions in field of household
    employment 109
Convenience outlets 480
Cooking
  and serving center, kitchen . . 16
  training household employee 120–122
  utensils
    care of
      aluminum 208–209
      copper 210–211
      earthenware 223
      enamel 223
      glass 223
      iron 211–212
      stainless steel 215
      tin 215
    packing 402
    storage 16–17, 20–26
Cooling and dehumidification (air
    conditioning) 439–440
Cooperative banks 84
Copper, care of
  cooking utensils 210–211
  decorative objects 210
Cords, electrical
  care of 396
  repairing 484–485
Corduroy, washing 288–289
Cork
  lamp shades, care of 200
  walls, care of 165
Corn brooms 133
  care 133
  use 133
Cornice boards, care of 165
Corridor (2-wall) kitchen . . . 18
Cottons
  laundering, *see* Washing and Ironing
  rugs, care of 179
Cove lighting 508
Crackled or "checked" varnish . . 189
Cream stains, removing 322
Crease resistant fabrics, care of . 283
Credit unions 84
Crib sheets and pads, washing . . 296
Crickets 359–360
  control 360
  habits 360
  types 359
Croton bugs 357

PAGE

Cruet, vinegar, care of 222
Crystal lamps bases, care of . . 198
Cupboards, kitchen 22
  partitions 22
Cupramonnium rayon 281
Curtains 275
  drying 302–303
  how to make 330–332
    cutting 332
    finishing 332
    length 331
    materials 331
    measurements 331
    yardage 331–332
  ironing 275
    ruffled 275
    straight 275
  packing 403
  starching 267
  washing 301–302
    cotton 302
    rayon 302
    silk 302
Cushions, rug 174
Cutlery
  care of 224
  racks 25–26, 224
  storage 25, 26
Cuts and wounds, avoiding . . . 102

Daily housecleaning 226–227
Damaged wallpaper, repairing .163–164
Damask, ironing 273
Defective wiring 90
Deficiency judgments 80
Diapers 295–296
  boiling 296
  boric acid rinse 296
  washing 295–296
Dining room
  cleaning 233–235
  closing for season 406
  lighting 512–514
Dishcloths, special care 225
Dishes, special care 222–223
Dish towels, special care 225
Dishwasher 220–221
Dishwashing 217–225
  cooking utensils, special care 223–224
    aluminum 208–209
    copper 210–211
    earthenware 223
    enamel 223
    glass 223
    iron 211–212
    stainless steel 215
    tin 215

Dishwashing—*Continued* PAGE
  cutlery, special care 224
  dishcloths, special care 225
  dishes, special care 222–223
    fine china 223
    metal trim 223
    storing 223
  dishwasher, care of 220–221
  efficiency 217–218
  equipment, list 218
  glassware, special care . . .221–222
    cloudy 222
    cut glass 222
    mineral deposit 222
    vinegar cruets 222
  methods 219–221
    by hand 220
    dishwasher 220–221
    preparation for washing .219–220
  soap 218–219
  water 218
  woodenware, special care . . . 225
Disposal, garbage 31
Doilies, ironing 275
Door frames, care of 168
Doors, repairing 528–532
  bolts 532
  cracked panels 531
  door closers 532
  failure to latch 529–531
  fitting pane of glass 531
  handle, loose 528
  hinges, loose 529
  locks 532
  rattling 532
  removing from frame 528
  seals 532
  slamming 532
  squeaking 528
  sticking 529
  striking 529
  swelling 529
  warping 531
Double security contracts . . . 82
Drainboards, area 27
Draining plumbing system . . . 457
Drainpipes 453
Drain traps, care of 244, 464
Draperies
  how to make 330–334
    cutting 332
    finishing 332–333
      lined 333
      unlined 332
    length 331
    materials 330
    measurements 332
    pleats, top 333–334

Draperies—*Continued* PAGE
box 334
French 334
pinch 334
yardage 332
packing 402–403
storage 379
Drawers
kitchen 22
bins 24
partitions 22
trays, sliding 24
packing 403–404
repairing 545–546
Dresden china lamp bases, care of 197
Dresses
ironing 275
starching 267
Dressing table skirts, how to make 334–339
directions 335–339
minuet 336–337
organdy 338–339
tissue antique 335–336
materials 334
measuring 335
types 335
Drycleaning
safety 100
professional 309–311
Drying
center, equipment 40
rayon fabrics 283
silk fabrics 283
Duties, household employees . . 111
Dust cloths, use and care . . . 136
Dusters, treated, how to make . . 136
Dust mops, use and care 134
Dusting
bed frames 235
ceilings 166
floors 134
furniture 185
leather 193
mirrors 196
precautions 185
wallpaper 157
walls 157
Dye stains, removing 322
Dyeing fabrics 305

Earthenware cooking utensils, care of 223
Egg stains, removing 322
Elastic yarn garments, care of . . 286
Electric
coffeemakers
percolators 391

Electric—*Continued* PAGE
care 392
use 391
vacuum 391–392
care 392
use 391
cords, care of 396
heaters 450
meters 474–475
how to read 474–475
mixers 26, 387–389
care of 389
storage 26, 388
use 389
plugs, care of 396
power
cost of 473–475
calculating 473–474
measurement of 473–475
kilowatt hours 473
sliding rate scale . . . 473
kilowatts 473
watts 475
amount consumed by appliances 475
ranges, care of 250
roasters 390–391
care 391
use 390
shock 101–102
table grills 394
care 394
use 394
toasters 395
care 395
waffle bakers 392–394
care 394
seasoning 392
use 392–393
Electrical
equipment, small 387–397
care of 387–397, 486
cost of operation 396–397, 475–477
general rules 482–483
handling, cautions . . . 482–483
repairs 484
caution 484
cords 484–485
other 485
Electricity 469–485
adequate wiring . 469–470, 477–482
theory 470–473
amperes 472
circuit 470
breakers 472
conductors 471
current 471
alternating 471

Electricity—*Continued* PAGE
direct 471
flow 472
cutoff switch 472
cycle 471
frequency 471
fuse blocks 472
fuses 472
insulators 471
non-conductors 471
voltage 471
wires 472
Electrolytic method for cleaning silver 214
Employees, household 109–126
Employer's responsibilities in household employment . . . 113
Emergency reserve, budgets . . 75
Embrodiery, ironing 275
Enamel
cooking utensils, care of . . . 223
surfaces 31
care of 243
Equipment
cleaning 140–142
dishwashing 218
electrical, small . . . 387–397, 486
kitchen 16, 17
laundering 255–256
painting 570–574
refinishing wood furniture . . 537
sewing 45
sports, storage of 66–69
stain removal 314
Explosions, smoke 181
Extinguishers, fire 93
Extracting water in laundering 268–269

Fabrics
fireproofing 93, 94
dyeing 305
temperatures for ironing . . . 273
tinting 305
with special finishes, care of 283–286
air-cooled 286
crease-resistant 283–284
elastic yarn 286
permanent 285
pre-shrunk 284
water-repellent 284
Falls, avoiding 95
Fans
attic 440
kitchen ventilating 30, 440
Fat fires 91
Faucets, dripping 465
Federal loan banks 84
Felt-base floor covering, care of . 151

PAGE
Fiber
brooms, care and use 133
rugs, care of 179–180
Finance companies 85
Finishes
fabrics 283–286
floors, wood 146–149
furniture 184
reviving 187
Finishing center, laundry . . . 40
Fire
-arms, precautions 103
extinguishers 93
-places 206–207
cleaning 206
accessories 206–207
daily care 206
precautions 88, 209
special care 407
-works 92
Fires, common causes of . . . 87–93
First aid, American Red Cross Text Book 104
Fixed expenses, budgets 72
Fixtures, bathroom
care of 244, 459–461
selection 460
types 459
Flatwork, ironing 274–275
Fleas 360–361
control 360–361
danger to man 360
habits 360
types 360
Flexible expenses, budgets . . . 72
Flies (control, danger to man, and habits) 361–363
blow fly (bottle fly) 362
cluster fly 362
fruit fly 362–363
housefly 361–362
latrine fly 363
lesser housefly 363
stable fly 363
Floor
cloths, care of 137
finishes 184
plans
apartment 4
bathrooms 463
kitchen 18
wax
applicators, care and use . . 133
liquid, use 144
paste, use 143
removing 145

Floor wax—*Continued* PAGE
self-polishing, use 143
Floors
asphalt tile, care of 151–152
cement (concrete), care of . 155–156
clay or ceramic tile, care of 153–154
clothes closets 66
composition tile, care of . . . 153
factors influencing care . . . 143
felt
back linoleum, care of . . . 150
base floor covering, care of . 151
kitchen 30
care of 143
laundry 43
linoleum, care of 150–151
marble
care of 154–155
stains, removing 155
plastic magnesia cement, care of 156
rubber tile, care of 152
safety measures 95
sheet rubber, care of 152
slate tile 154
terrazzo, care of 155
tile, clay or ceramic, care of . 153–154
stains, removing 154
waxed, care of 144–145
wood 144–149
characteristics of 145–146
finishes
gloss lacquer; care of . 147–148
oil; care of 148
paint; care of 149
penetrating finishes or seals care of 148
shellac; care of . . . 146–147
varnish; care of 147
wax; care of 143–145
unfinished; care of 149
Flour moths 380
control 380
habits 380
Flues, care of 450
Fog or bloom on furniture . . . 189
Food
budget 72–74
poisoning 100
storage and preparation center, kitchen 15
Footcandle, definition 504–505
Form, budget 76–77
Formula
basic starch 266–267
reagents used in stain removal 316–317
Foundation garments, washing . 292
Fringe, care of 278

PAGE
Fringe, on rugs 181
Fruit
fly 362–363
stains, removing 322
Fuel
kinds 425–432
line, kerosene ranges, care of . 251
saving 432–435
Fugitive colors 287–288
Fumigants 348
moth 371
Fumigation
closets 378
furniture 374–375
Fur rugs
care of 179
moth prevention 379
Furniture
cane, care of 194
children's 50–53
chromium, care of 194
finished wood
applying new finish . . . 538–539
"pickling" 540–541
shellac 539
stain 539–540
varnish 538–539
painting 541–543
bleaching 538
care of 184–189
dusting 185
precautions 185
garden, painting 542
general care 184
leather, care of 193
imitation 193
packing to move 404
painted, care of 194
painting 541–543
garden 542
over old finish 542
porch 542
selecting paint 541
unfinished 541–542
wicker 543
"patcher" 537
"pickling" 540–541
plastic, care of 195
polish 186
type 186
use 186
polishing 185–186
general rules 185–186
precautions 186
types of polish 186
porch, painting 542
rattan, care of 194

Furniture—*Continued* PAGE
reed, care of 193–194
refinishing 537–542
removing
old finish 537–538
equipment 537
old wax 187
repairs 187–189, 543–546
major 543–546
broken frame 544
dowels 544–545
cane seats 545
drawers 545–546
back stop 545
handles 546
runners 545–546
sticking 545
legs, loose 543–546
rungs, loose 543–544
tables 546
leaves 546
not level 546
warped 546
loose top 546
minor 187–189
alcohol stains 188
burns 189
candle wax 189
"checked" or crackled varnish 189
fog or bloom 189
grease spots 189
heat marks 188
ink spots 189
paint spots 189
scratches 188–189
(on) polished surface . 188
(on) waxed surface . . 188
severe 188–189
watermarks 187–188
re-upholstering 547–549
covering 549
gimp 549
padding 548–549
springs 547–548
underlining 549
webbing 547
reviving finish 187
rubbing 187
rustic
care of 195
storage of 69
stainless steel, care of 194
storage 404–405
types of finish 184
upholstered 190–193
cleaning 190
professional 192
leather
conditioning 193
dusting 193
imitation 193
washing 193
moth proofing 374–375
raising flattened nap . . . 192–193
regular care 190
shampooing 190–192
spots and stains 192–193
wash, formula 187
washing 186–187
wicker, care of 194
painting 543
wrought iron, care of . . . 194, 211
Fuses 472, 480

Games, etc., storage of 70
Garage
for electric mixer 26
storage 69
Garbage
cans, care of 252–253
containers, care of 253
disposal 31
community regulations . . . 31
grinder, electric 31
Garden furniture, painting . . . 542
Gas 486–489
burners, care of 249–250
cast iron 250
modern 250
characteristics 431–432
cost 486–487
equipment 487
heaters 449
leaks 92
measurement 487–489
meter 487–488
how to read 488
ranges, care of 249–250
repairs 489
safety 489
saving fuel 432–435
service 489
types 431
bottled 486, 488
manufactured 431
mixed 431
natural 431
Gasoline, danger of 89, 90
Glass
blocks, care of 165
cooking utensils, care of . . . 223
cut, care of 222
packing 400–401

Glass—*Continued* PAGE
tempered plate walls, care of . 165
Glassware, care of 221–222
Glazed chintz
"permanent" finish 285
shades, care of 170
Gloss
finish wallpaper, care of . . . 164
lacquered floors, care of . . . 147
Gloves
fabric 294
leather 293–294
washing 293–294
Glue stains, removing 322
Glued or pasted lamp shades, care of 198
Grain beetles 380
control 380
habits 380
Grass
cloth wall covering, care of . 164–165
rugs, care of 179, 180
stains, removing 322
Grease
spots
non-washable wallpaper . . 160
removing 322
upholstered furniture . . . 192
washable wallpaper 162
wood furniture 189
Grills, electric 394
Grinder, electric, for garbage . . 31
Guarantee
"moth proof" 379
waivers 82
Gum arabic solution for freshening fabrics 268
Gypsum wall board, care of . . . 165

Halls
cleaning 247
lighting 512, 514
Hammered aluminum, care of . . 209
Hampers, care of 246
Handkerchiefs, sterilizing . . . 297
Hard
water
effect on pipes 452
laundering 256–257
softening . . . 256–259, 458–459
wax, use on furniture 186
Health certificates, household employees 112
Heat marks on furniture, removing 188
Heaters
space 448–450
electric 450

Heaters—*Continued* PAGE
cost of operation 450
radiators 450
reflector type 450
fireplaces 448–449
gas
circulator type 449
radiant 449
radiator 449
oil 449–450
portable 449
stationary 449
stoves, coal or wood . . . 449
closed 449
open 449
water 445–448
Heating systems 413–450
ash disposal 430
banking fires 420, 425
care of 417–418
central 415–417
radiator 416
split 416–417
warm air 415–416
cleaning 417–418
closing house 409
coal
hand-fired, operation . . 419–420
stoker-fired, operation . . . 421
coke
hand-fired, operation . . . 420
stoker-fired, operation . . . 421
comfort standards 414–415
controls 423–424
automatically fueled system . 423
safety switch 423
stack switch 423
hot water radiator system . . 424
water temperature limiting switch 424
steam or vapor system . . 423–424
aquastat 424
low water cut out 424
pressure 423
warm air systems 424
air temperature limiting switch 424
flue pressure switch . . . 424
temperature 424
dampers 419–420
ash pit 419
caution 420
check 419
feed door 419–420
defects 441–445
dust or soot 444–445
house too cold 443
leaky radiators 444

Heating systems—*Continued* PAGE
noisy steam pipes 443
one room
overheated 442–443
underheated 441–442
slow start 444
sluggish fire 444
too much fuel used 445
fuel 425–432
coal 425–430
anthracite 425–430
bituminous 425–430
coke 425–430
gas 431–432
manufactured 431
mixed 431
natural 431
oil 430–431
grades 430–431
saving 432–435
storage 431
gas burners, operation 423
hand-fired, operation . . . 418–421
dampers 418–420
operation 418–421
inspection 417–418
magazine feed boilers, operation 421–422
oil burners 422–423
installation 422
operation 422–423
types 422
safety measures 88
starting the fire (coal and coke) 427–428
stoker-fired, operation 421
storage of coal and coke . . 429–430
ways to save fuel 432–435
Height of working surfaces
ironing board 42
kitchen cabinet 27
laundry trays 42
sewing table 48
sink 27
test for 27
Holes in rugs 177
"Home Hygiene and Care of the Sick" 107
Home nursing 106–108
administration of medicine . . 108
care of patient 107
Hospital corners, bedmaking . . 239
Hot
fat, burns, avoiding 99
liquid, burns, avoiding 98
Hours, household employees . 110–112
Housecleaning
baby's room 242–243

Housecleaning—*Continued* PAGE
daily 242
weekly 242–243
bathroom 243–247
daily 246
equipment 243–244
family cooperation 243
weekly 246–247
bedrooms
daily 239–240
family cooperation 235
weekly 240–241
seasonal 241–242
daily 226–227
order of work 226–227
system 226
dining room 233–235
daily 233
seasonal 234–235
weekly 233–234
equipment 131–142
care and use of
applicators, floor wax . . 133
brooms 133
brushes 134–136
carpet sweeper . . . 132–133
cloths 136–137
chamois 136
dusters 136
floor 137
polishing 136
mops 134
dust 134
wet 134
sponges, cellulose 137
vacuum cleaner . . 131–132
cleaning basket 142
list 140–142
storage of 137
halls 247
kitchen 247–254
daily 253
large equipment . . . 248–253
weekly 231–232
living room
daily 230–231
family cooperation 230
seasonal 232
weekly 231–232
seasonal 228–229
order of work 229
part-time help 229
system 228
stairs 247
weekly 227–228
"don'ts" 227–228
system 227
Housefly 361–362

PAGE

House-hunting 3–6
Housekeeping schedules . . . 9
House on fire, what to do . . . 94
Household employees . . . 109–126
  accident compensation . . 112
  age, desirable 126
  causes for complaint . . . 111
  choosing 114–117
    interviews 115
      personal 115
      telephone 115
    sources 114–115
      advertisements 115
      agencies 114
      personal contacts 114
      state employment office . . 114
      training schools . . . 144, 127
  community councils 113
  duties 111
  employer's responsibilities . . 113
  health certificate 112
  hours 111–112
    on call 112
    off duty 112
    working 111
  living conditions 112
  National Council on Household Employment 111
  "notice" 112
  part time 126
  present conditions 109–110
    security 110
    wages and hours 110
  schedules 118
  sick leave 113
  smoking 126
  solutions to present problems . 110
    betterment of
      economic and social status . 110
      living conditions 110
      working conditions . . . 110
    training 110
  training 119–127
    attitude of employer 119
    child care 125
    cleaning 123–124
    cooking 120–122
    laundering 124–125
    sewing 124
  uniforms 116, 117, 126
  vacations 112
  wages 112
  working agreement 111
Houses
  to buy 4
  to remodel 6

PAGE

Humidification, in air-conditioning 436–439
Humidifiers, portable 439

Ice cream stains, removing . . . 323
Ice refrigerators, care of . . . 248–249
Identification
  household pests 345–346
  poisons 99
I.E.S. lamps 509–510
Illegel lenders 85
Illuminating Engineering Society 505, 509, 510
Imitation leather, care of . . . 193
Improvements, kitchen 15
Indelible pencil stains, removing . 323
Indirect lighting 508
Industrial banks 85
Ink stains, removing
  fabrics 323
  wood furniture 189
Insecticides 346–348
Installation of rugs 174
Installment buying 80–83
  "add-on" contracts 82
  advantages 81
  deficiency judgments 80
  disadvantages 80
  double-security contracts . . 82
  guarantee waivers 82
  justification for 80
Insulation
  board walls, care of 166
  house 433–434
Interviews, household employees . 115
Inventory budget 79
Iodine
  for scratches on wood furniture 188
  stains, removing 323
Iron
  care of
    cooking utensils 211–212
      seasoning 211
    smoothing 280
    wrought 211–212
  rust stains
    on enamel surfaces 244
    on fabric 323
Ironer, care of 280
Ironing 272–280
  bedspreads 300
  blouses 275
  board, height 42
  by hand 273
  by machine 273–274
  curtains 275
    ruffled 275

Ironing—*Continued* PAGE
straight 275
damask 272
doilies 275
dresses 275
embroidery 275
flat work 274–275
fringe 278
general rules 272–273
iron, care of 280
ironer, care of 280
lace 278
men's washable suits . . .277–278
neckties 280
pajamas 278
pleats 278
pressing 279–280
rayon 272–273
ruffled curtains 275
silk 272–273
sheets 274
smocking 278
slide fasteners 278
shirts, soft 275–277
by hand 275
flat plate ironer 276–277
folding 277
rotary ironer 276
tablecloths 274
tatting 278
temperature for various fabrics 273
trimmings 278
tucks 278
wearing apparel 275–278

Kerosene ranges, care of . . . 251
burner bowls 251
flame 251
flame spreaders 251
fuel line 251
wick tubes 251
wickless kindlers 251
wicks 251
Kilowatts 473
Kitchen
cabinet 27
shelves 27
putting up 555–557
toe space 27
work surface
area 27
height 27
Kitchens
business center 34
ceiling 30
children, cooperative work . . 32
cleaning 247–254
daily 253

Kitchens—*Continued* PAGE
weekly 253–254
closing for season 405–406
floor plans 18
floors 30
garbage cans, care of . . .252–253
improvements, inexpensive . . 15
kitchen-laundry 40
kitchen-utility room 42
lighting 28
paper, uses of 32
ranges, care of 249–252
refrigerators, care of . . .248–249
sinks, care of 252
storage problems 20–26
ventilation 29
fans 30
hood over range 30
walls 30
wiring 29
woodwork 30
work areas 27
work centers 15
work surfaces, care of . . . 31
Knitted garments, washing .289–290
Knives
metal discs 224
sharpening 224
natural oil stone 224
storage 25, 26

Labels and instructions
equipment 34, 387–388
rugs 177
Lace
freshening 268
ironing 278
washing 294
Lacquer for
floors, care of 147–148
wallpaper 161–162
Lacquering brass 209
Lamp
bases, care of 197–198, 403
crystal 198
Dresden china 197
marble 198
metal 197
onyx 198
packing 403
porcelain 197
pottery 197
stone 197
tole 197
shades, care of . . . 198–200, 403
cellophane wrapping 198
chintz 198
cork 200

Lamp, shades—*Continued* PAGE
general care 198
homespun 198
imitation parchment 200
linen 198
metallic paper 200
packing 403
parchment 200
pasted or glued 198
rayon 198
silk 198
hand painted 198
thermoplastic 200
vellum 200
Lamps
do's and don'ts 512
I.E.S. 509–510
characteristics 510
specifications 509–510
types 510
reflector type 508
remodeling 510–512
bridge lamp into floor lamp . 511
down-turned bridge lamp . . 510
increased wattage 512
table lamps 511
upturned bridge lamps . .510–511
Lap table, kitchen 27
Larder beetle 380–381
control 380–381
habits 380
Latrine fly 363
Laundering
bleaching 265
bluing 265
drying 269–270
equipment 255–256
hard water problems . . .256–257
ironing 272–280
soaps 259–260
sprinkling 270
starching 265–268
washing, *see* Washing
Laundries, power 306–309
how to judge 306–307
services offered 308–309
Laundry
room 38–42
equipment 255–256
floors 43
lighting 43
location 38
space necessary 38
types
clothery 41
kitchen-laundry 40
utility 42
ventilation 43
Laundry—*Continued* PAGE
walls 43
work centers 39–40
drying 40
finishing 40
sorting and stain removal . 39
washing 39
-tested and approved seal . . 307
trays, height 42
Lavatories, selection of 464
"Lay" of pile rugs 177
Lead paint, danger 562
Leaks, gas 92
Leather
book covers, care of 205
furniture, care of 193
imitation, care of 193
Lemon oil
and rottenstone or powdered pumice 188, 189
use 186
Lenders, illegal 85
Lesser housefly 363
Liabilities, budgets 78
Lice 363–364
body 364
control 364
danger to man 364
habits 364
head 363–364
control 364
habits 363
Life insurance 75
Light
bulbs
care of 197
tinted 509
-conditioning 508–509
meter 503–505
Lighting 503–516
built-in 516
ceiling fixtures 508
children's rooms 61
clothes closets 64
cove 508
sections 508
diffused 506
fixtures, care of 197
footcandle 504–505
general illumination 508
glare, elimination of 506
harsh contrasts, elimination of 506–508
I.E.S. lamps 509–510
indirect 508
lamps 509–512
I.E.S. 509–510
reflector-type 508

Lighting—*Continued* PAGE
torchieres 508
urns, floor, table, wall . . 508
remodeling 510–512
light
meter 503–505
-conditioning 508–509
local illumination 509–512
quantity 503–505
effect of distance 506
footcandle 504–505
light meter 503–505
reflector-type lamps 508
remodeling lamps 510–512
requirements for various tasks 503–506
minimum 505–506
rooms, specific 512–516
safety 98
science of seeing 503
Linen
lampshades, care of 198
storage 63-64
Linens, laundering, *see* Washing and Ironing
Lingerie, washing 292
Linoleum
floors 150–151
care of 150–151
types 150
walls, care of 165
work surfaces, care of 30
Linseed oil and rottenstone or powdered pumice 188, 189
Lipstick stains, removing . . . 324
Liquid wax, use 144
L-shaped kitchen 18
Living conditions, household employees 110, 112
Living room
child center 53
cleaning of 230–232
closing for season 406–407
lighting 512

Marble
floors, care of 154–155
lamp bases, care of 198
Matches
burns from, avoiding 99
cause of fire 89
Mattress pads, washing 297
Mattresses
care of 236–237
innerspring 236
latex foam 236–237
pad 236

Mattresses—*Continued* PAGE
two layer 236
renovation of 237
cotton 237
hair 237
innerspring 237
kapok 237
Medicine
administration of 108
cabinet 104
contents 104
"don'ts" 104
Mending before laundering . . . 267
Mercury arc sunlamps, care of . 200
Mercurochrome stains, removing . 324
Metal lamp bases, care of . . . 197
Metallic paper lampshades, care of 200
Metals, care of 208–216
aluminum 208–209
brass 209–210
bronze 210
chromium 210
copper 210–211
iron 211–212
monel 212
nickel 212
pewter 212
silver 213–215
-like alloys 215
steel 215
tin 215
zinc 216
Meters
electric 474–475
gas 487–488
light 503–505
Mice 364–365
control 365
habits 364
Mildew
on books 205
stains, removing 324
Milk stains, removing 324
Mirrors, care of 196, 402
dusting 196
packing 402
paint or varnish spatters, removing 196
re-silvering 196
washing 196
Mites, food 381
control 381
habits 381
Mixers, electric 387–389
Monel, care of 212
Monograms, appliqued . . . 340–342
Mosquitoes 367–368
control 367–368

Mosquitoes—*Continued* PAGE
danger to man 367
habits 367
Moth
crystals 369–370
naphthalene 369
paradichlorobenezene . . . 369
fumigants 371
proof
guarantees 379
storage 376–379
bags and boxes 376
cedar
chests 376
-lined closets 376
closets 378
fumigation of 378
cold 378–379
draperies 379
general rules 376
rugs 379
trunks 378
proofing
rinses 371
sprays 370–371
clothing 371
rugs 371
upholstered furniture . 370–371
Moths (clothes) 368–379
control, general 368–369
habits 368
in upholstered furniture . . 374–375
fumigation 374–375
prevention 374–375
cleaning 374
sprays 374
storage 375
wise buying 374
types 368
Moulded plastic walls, care of . . 165
Mouldings, care of 168
Moving 398–404
cost 399
organization 399–400
insurance 398
inventory 399
labels 399
personal supervision . . 399–400
packing 400–404
bedding 404
books 402
bureau drawers 403–404
china 400–401
clothes 404
cooking utensils 402
curtains 403
draperies 402–403
furniture 404

Moving—*Continued* PAGE
glass 400–401
lamps 403
mirrors 402
pictures 402
rugs 402
silver 401–402
reliable companies 398
services offered 398
tipping 400
Mud stains, removing 324

Nail polish stains, removing . . 324
Nap, furniture, raising . . . 192–193
Naphthalene crystals 370
National Adequate Wiring Bureau 477
National Association of Dyers and Cleaners 309
National Council on Household Employment 111
National Electrical Code . . . 480
National Youth Administration, household employment . . . 114
Neckties, pressing 280
Nickel, care of 212
Non-perforated acoustic tile ceilings, care of 167
Non-washable wallpaper, care of 160–161
"Notice," household employees . 112
Nutmeats, for removing scratches from furniture 188
Nylon
brushes, care of 136
stockings, care of 292–293

Oil
fuel 430–431
grades 430–431
safety 431
saving fuel 432–435
storage 431
heaters 449–450
lemon, use 186
linseed 186
peppermint, for furniture . . 188
Oiled floors, care of 148
Onyx lamp bases, care of . . . 198
Order of work
daily housecleaning 226–227
seasonal house cleaning . . . 229
Organdy
care of 286
freshening 268
Oriental rugs, care of 178
Ovens, care of 249, 250
electric 250
gas 249

INDEX

PAGE

Pad method, bleaching stains . . 319
Paint
brushes 570–572
cleaner, for woodwork 167
composition of 558–559
kinds 560–562
lead, danger 562
selection of 559
stains, removing 325
thinners 559
spots on windows, removing . . 170
Painted
ceilings, care of 167
floors, care of 148–149
furniture, care of 194
walls, care of 158–160
woodwork, care of 167
Painting 562–569
creating colors 566
drying 568–569
equipment 570–574
adjuncts 573–574
brushes 570–572
sprayers 572–573
storage 573
financing 576
furniture 541–543
garden 542
over old finish 542
porch 542
unfinished 541–542
wicker 543
mixing colors 565
number of coats 568–569
preparation of surface . . . 562–564
screens 552–553
frames 553
styling 567–568
technique 564–565
thinning paint 574–575
waterproofing 574–575
basements 574–575
chimneys 575
walls 575
Pajamas, ironing 278
Panelled
ceilings, care of 167
walls, care of 166
Paper, in the kitchen 32
Papered ceilings, care of . . . 167
Paradichlorobenzene crystals . . 369
Parchment
lampshades, care of 200
paper, uses 32
Part-time employees 126, 229
Paste wax 143
Pastry board dimensions 27

PAGE

"Patcher" (furniture) 537
Pawnbrokers 85
Penetrating finishes or seals for floors 148
Peppermint
essence of, furniture care . . . 188
oil of, furniture care 188
Percentage pattern-budgets . . . 79
Perforated acoustic tile ceilings, care of 167
Permanent finish for fabrics . . 285
Personal
allowances, budgets 78
interviews, hiring household employees 115
Perspiration stains, removing . . 325
Pest control firms 349–350
reliability of, judging 350
services offered 349
Pests, household 345–386
chart 385
fumigants 348
identification of 345–346
insecticides 346–348
specific pests, habits and control 350–386
Pewter, care of 212–213
Phonograph records, storage . . 70
Pianos, care of 201–202
cleaning exterior 201–202
heat, effect of 201
humidity, effect of 201
keys 202
cleaning 202
yellowing 202
temperature change, effect of . 201
tuning 201
voicing 201
"Pickling" wood furniture . . 540–541
Pictures
care of 196–197
packing 402
Pile fabrics, steaming 278–279
Pillows 237–238
airing 237
renovation 237–238
washing 238
Pipes, plumbing 453–458
Plastic
furniture, care of 194
work surfaces, care of 31
Pleats
how to make 333–334
ironing 278
Plumber, choice of 452
Plumbing 451–468

Plumbing—*Continued* PAGE
bathroom
fixtures, selection of . . . 462–464
floor plans 461–464
draining systems for winter . . 457
effect of water on pipes . . . 452
corrosive 452
hard 452
soft 452
fixtures
baked enamel 459
care of 460–461
"don'ts" 460–461
porcelain enamel 459
vitreous china 459
health requirements 451–452
neutralizers, water 459
pipes
care of 457–458
clogged 464
corrosion 453
drain 453
frozen 466
installation 455–456
kinds 453–454
leaks 466
noisy 467
protection of 456–457
scale 453
service 453
size 454–455
shutting off 409
troubles 464–467
water-softening systems . . 458–459
Plugs, electric, care of 396
Plywood veneer, care of 166
Poisoning, food 100
Poisons, safety measures . . . 99
Polish
furniture 186
wood surfaces 166
Polishing
brass 209–210
cloths 136, 185
copper 210–211
furniture 185
kitchen ranges 251
silver 214
Porcelain
enamel bathroom fixtures . . 459
enamelled steel tile walls, care of 165
lamp bases, care of 197
Porch furniture, painting . . . 542
Porches, safety measures . . . 96
Pottery lamp bases, care of . . 197
Power laundries 306–309
Pressed wood walls, care of . . 165
Pre-shrunk fabrics 284
Pressing 279–280
cloths 279
neckties 280
rayon 279–280
silk 279–280
wool 279
Psocids (book lice) 355
Pullman (1-wall) kitchens . . . 18
Pumping equipment 491–493
Pumps 492–493

Quilts, washing 300

Racks
cutlery 25–26, 224
kitchen storage 24
Radiator shields 158
Radiators, care of 207
exposed 207
recessed 207
Ranges, care of 249–252
coal 251
polishing 251
electric 250
broiler 250
daily care 250
oven 250
units 250
closed 250
open 250
gas 249–250
broiler 249
burners 249–250
daily care 249
oven 249
kerosene 251
burner bowls 251
flame 251
spreaders 251
fuel line 251
wickless kindlers 251
wick tubes 251
wicks 251
wood 251–252
polishing 251
Rats 365–367
control 366–367
danger to man 365
habits 365–366
types 365
Rattan furniture, care of . . . 194
Raw linseed oil, furniture care . 186
Rayon
and wool rugs, care of . . . 180
bedspreads, care of 300
curtains, care of 301–303

	PAGE
Rayon—*Continued*	
lamp shades, care of	198
rugs, care of	180
Rayons	
bleaching	265
drying	283
freshening	268
ironing	272–273
pressing	279–280
types	281–282
acetate	281
cuprammonium	281
spun	281–282
viscose	281
washing	282–283
by hand	282
by machine	282–283
Record system, budgets	76–78
Records, phonograph, storage of	70
Reed furniture, care of	193–194
Refinishing wood furniture	537–542
Refrigerators, care of	248–249
automatic	248
ice	248–249
Registers, care of	207
Removing old wax from	
floors	145
furniture	187
Renovation of	
mattresses	237
pillows	237–238
Repairing	
doors	528–532
furniture, wood	543–546
minor	187–189
screens	551–552
Venetian blinds	536
window shades	535–536
windows	532–535
Re-silvering mirrors	196
Re-upholstering furniture	546–550
Reviving furniture finish	187
Reward system, budgets	71–72
Rings, stain removal	319–320
Rinses, moth-proofing	371
Rinsing, laundering	264
Roasters, electric	390–391
Rooms	
cleaning of (specific)	230–254
for	
adolescent child	59
babies	49
children	50
small	50–53
Rouge stains, removing	324
Rubber floor covering, care of	152
sheet	152
tile	152
Rubbing wood furniture	187
Rubbish, cause of fire	87
Ruffled curtains, ironing	275
Ruffles, starching	267
Rug cushions	174
care of	181–182
Rugs	173–183
beating	175
cleaning, professional	176
cotton, care of	179
fiber, care of	179–180
fringe on	181
fur, care of	179
grass, care of	179–180
hanging on line	175
holes or tears	177
hooked, care of	178–179
humidity, effect of	176–177
labels and instructions	177
moth	
prevention	379
proof storage	379
oriental, care of	178
packing	402
pile	177–178
care of	177–178
lay of	177
shading	177
shedding	177
rayon	
and wool, care of	180
care of	181
scatter	
care of	181
safety measures	95
sculptured, care of	178
selection of	173
shaking	175
shampooing	
large	175–176
small	176
sisal, care of	179–180
spots and stains	176, 182–183
stair carpeting, care of	181
textured, care of	178
tufted, how to make	342–344
tufts or knots	175
turning	175
types of soil	173
Rustic furniture	
care of	195
storage	69
Safety in the home	87–108
asphyxiation	101
burns and scalds	98–99
hot	

Safety in the home—*Continued* PAGE
fats 98
liquids 98
matches 99
children, protection of 103
cuts and wounds 102
dry cleaning at home 100
electric shock 101–102
electrical equipment . . . 482–483
falls 95–98
balconies 96
bathtubs 96
chairs 96
floors 95
poor lighting 98
porches 96
scatter rugs 95
sidewalks 96
stairs 95–96
windows 96
fire
extinguishers 93
proofing fabrics 93–94
firearms 103
fires 87–93
causes 87–93
candles 91
celluloid 93
chimneys 88
Christmas decorations . . 92
defective wiring 96
fat fires 91
fireplaces 88
fireworks 92
flues 88
gas leaks 92
gasoline and other flammable compounds . 89–90
heaters, space 88
heating systems 88
matches 89
rubbish 87
smoking 89
precautions 95
what to do
clothing on fire 94
house on fire 94
first aid 104
fuel oil 431
home nursing 106–108
care of patient 107
medicine, administration of . 108
medicine cabinet 104
contents 105–106
"don'ts" 104
poisoning, food 100
poisons 99–100
antidotes 100

Safety in the home—*Continued* PAGE
identification 99
precautions 99
smoke explosions 101
tools 103
Salad dressing stains, removing . 325
Sample working agreement, household employees . . 117–118
Savings and investments, budgets 75
Scalds, avoiding 98
Scatter rugs
care of 177, 181
safety measures 95
Schedules
household employees 118
housekeeping 9–13
adjustments 13
benefits of 9
how to make 9
plan 10
skeleton 12
Scorch stains, removing 325
Scratches on furniture 118
Screens 551–553
hanging 551
painting 552–553
frames 553
repairing 551–552
holes 551–552
replacing wire 552
tears 551–552
roll-ups, care of 553
storing 553
taking-down 553
washing 172
Sculptured rugs, care of 178
Seal, laundry-tested and approved 307
Seasonal housecleaning . . . 228–229
Seasoning, cast-iron utensils . . 221
Security
borrowing money 83–84
household employees 110
Seersucker garments, care of . . 286
Selection, rugs 173
Self-polishing wax, use 144
Septic tanks 495–496
Servants—see Household employees
Serving, training household employees 122–123
Sewage disposal 494–497
Board of Health requirements . 494
cesspools 496–497
care 497
construction 497
disposal field 497
location 497
purpose 497

Sewage disposal—*Continued* PAGE
combined septic tanks and cesspool 497
purpose 497
distance from house 494
septic tank 495–496
construction 495
outflow 496
purification field 496
tile field 496
purpose 495
size 495–496
use 495
grease trap 495
sand trap 495
Sewing
clothery 42
decorator's touch 326–344
curtains 330–334
draperies 330–334
dressing-table skirts . . 334–339
slip covers 326–330
tufted rugs 342–343
equipment 45
storage 45
household employees 124
lighting 48
room for 44
table, height of 48
Shades, care of
porch 171
window 170
Shading, pile rugs 177
Shaking rugs 175
Shantung fabric, care of 286
Shampooing
rugs 175–176
upholstered furniture . . . 190–192
Sharkskin fabric, care of . . . 287
Sharpening knives 224
Shedding, pile rugs 177
Sheet
music, storing 70
rubber floors, care of 152
Sheets, ironing 274
Shelf
edgings 32
paper 32
Shellac
finish
floors 146
furniture 184
scratches 188
method for finishing wood furniture 539
Shellacked
floors, care of 146
wood panelling, care of . . . 166

PAGE
Shelves
kitchen 20, 22
putting up 555–557
Shirts, soft
ironing 275–277
starching 267
Shock, electric 101–102
Shower
curtains, care of 245–246
cotton 245
duck 245
oiled silk 245
pliofilm 246
pyroxylin-coated 246
rayon 245
rubber 246
silk 245
stalls
care of 245
selection of 464
Showers, selection of 464
Sick leave, household employees . 113
Sidewalks, safety measures . . . 96
Silk
bedspreads, washing 300
bleaching 265
curtains, washing 301–303
draperies, washing 303–304
drying 283
freshening 268
ironing 272–273
lamp shades, care of 198
hand painted 198
pressing 279–280
washing 282–283
by hand 282–283
by machine 282–283
Silver, care of 213–215
candlesticks 214
packing 401–402
polishing 214
electrolytic method 214
washing 213–214
Silverfish 381
control 381
habits 381
Silver-like alloys, care of . . . 215
Sinks
drainboard area 27
draintraps, care of 252, 464
enamel surface, care of . . . 252
rust stains 244
height of, for comfort 27
metal fixtures, care of 252
monel, care of 252
stainless steel, care of 252
Sisal rugs, care of 179–180

PAGE

Slacks, starching 267
Slate tile floors, care of 154
Slide fasteners, ironing 278
Slip covers
  for chairs and sofas . . . 326–330
    how to make
      cutting 330
      measurements 326–327
      muslin pattern 328–330
      seam finishes 330
      yardage, figuring . . . 327–328
  for head-boards 339–340
    decorator finishes 340
    fabric suggestions 340
  washing 301
Smocking, ironing 278
Smoking
  cause of fire 89
  explosions 101
  household employees 126
Snack bars 18
Soaking laundry 262
Soap 259–260
  all purpose or general 259
  dish washing 218–219
  forms 259
  "mild" 259
  jelly 259
  "soapless" 259
  water softener 275
Sodium hexametaphosphate, water
    softener 257
Soil on rugs 173
Solutions, cleaning
  walls 158
  windows 169
Solvents for stain removal . . . 315
Sorting
  and stain removal center . . . 39
  laundry 261
Sources, household employees . . 114
Space requirements
  breakfast nooks 20
  kitchens 18
Spiders
  black widow 382
    control 382
    habits 382
  house 382
    control 382
    habits 382
Spinner, washing machine . . 268–269
Sponges, cellulose, care of . . . 137
Sports equipment, storage of 66–69
Spots and stains, removing . . 312–325
  absorbents 315
    using 317

Spots and stains—*Continued* PAGE
  before laundering 261
  bleaches 315–316
    using 317–319
      bowl method 317–319
      pad method 319
  chart for specific stains . . 321–325
  equipment 314
  formulas for reagents . . . 316–317
  general rules 312–314
  methods 317–319
  rings 319–320
    cause 319–320
    prevention 319–320
    treatment 319–320
  solvents
    effect on
      dyes 315
      fibers 315
    kinds 315
    sponging with 315
  specific (alphabetized chart of
      common stains) . . . 321–325
Sprayers, paint 572–573
Sprays
  insecticide 346–347
  moth 370–371, 374
Sprinkling clothes 270
Spun
  aluminum, care of 208
  rayon 281–282
Squirrels 383
  control 383
    animal-proof closet 383
  habits 383
Stable fly 363
Stain removal (*see* Spots and
    Stains)
Staining wood furniture . . . 539–540
Stainless steel, care of
  cooking utensils 215
  sinks 252
  work surfaces 215
Stains
  floor
    marble 154
    tile 154
  furniture
    upholstered 192–193
    wood
      alcohol 188
      grease 189
      ink 189
      paint 189
  rugs 176, 182–183
  specific (chart), removing . 321–325

Stains—*Continued* PAGE
wallpaper
non-washable 160–161
washable 162–163
Stair carpeting, care of 181
Stairs
cleaning
uncarpeted 247
varnished 247
safety measures 95–96
Starching 265–268
basic starch, formula . . . 266–267
blouses 267
children's clothes 267
collars and cuffs 267
curtains 267
ruffles 267
dresses 267
general directions 266
limpness, cause of 268
shirts 267
slacks 267
sticking, cause of 267–268
tinting 268
uniforms 267
State employment office 114
Steel
stainless, care of 215
tempered 215
Steam burns, avoiding 99
Steaming
pile fabrics 278–279
velvets 278–279
Stockings, washing . . . . . .
silk or nylon 292–293
wool 290
Stone
fireplaces, care of 206
lamp bases, care of 197
Straight curtains, ironing . . . 275
Storage
bathroom space 70
bins 24
bureau drawers 67
butler's pantry 20
children's rooms 53–59
cleaning equipment 137–140
clothes
closets 64–67
auxiliary equipment . . . 66
dimensions 66
clothes, children's 53–55
coal and coke 429–430
cupboards, kitchen 22
cutlery 25–26, 224
dishes 223
drawers, kitchen 22

Storage—*Continued* PAGE
electric mixers 26
attachments 26
fuel oil 431
games, cards, etc. 70
garage 69
kitchen equipment 16, 17
linen 63
moth-proof 376–379
one-handed 20
painting equipment 573
phonograph records 70
planning space for 62
problems, kitchen 20–26
racks 24
rustic furniture 69
sewing equipment 45
sheet music 70
shelves 20
special problems 62–70
sports equipment 66–69
toys 55–56
vegetables 26
Storm sash 433, 553–554
hanging 553–554
selection 553
Structural glass walls, care of . . 165
Styling with paint 567–568
Suits, men's washable
ironing 277–278
washing 290–292
Sun lamps, care of 200
carbon arc 200
mercury arc 200
Surfaces, work
areas 31
care of 31
height 27
Sweaters, wool, washing . . . 289–290

Table cloths, ironing 274
Tables
kitchen, height of 27
lap 27
repairing 546
Tatting, ironing 278
Tea stains, removing 325
Telephone interviews, household
employees 115
Telephones . . . 200–201, 497–502
care of 200–201
installation 498
location 499–500
planning for 497–500
conduits 498
typical lay-outs . . . 498–499
cost 498
extensions 499

Telephones—*Continued* PAGE
permanent 499
portable 499
types 500–501
desk 500
hand (French) 500
hang-up 500
outdoor 500
special 500–501
use 501–502
Tempered
plate glass walls, care of . . . 165
steel knives, care of 215
Temperatures for ironing . . . 273
Termites
control 383–384
habits 383
Terrazzo floors, care of 155
Tetraphosphate water softener . 257
Textured rugs, care of 178
Thermoplastic lamp shades, care of 200
Thinners, paint 559
use 564–566
Tile
board walls, care of 165–166
floors, care of
asphalt 151
clay or ceramic 153
composition 153
rubber 152
slate 154
walls, care of 165
Tin
cooking utensils, care of . . . 215
decorative ware, care of . . . 215
Tinting fabrics 305
Toasters, electric 395
Tobacco beetle 384–386
control 386
habits 384–386
Toe space, kitchen cabinets . . . 27
Toggle bolts 566
Toilet bowl, care of 244
Toilets, selection of 464
Tole lamp bases, care of . . . 198
Tool
bench 518
cabinet 518
kit 517–518
Tools
garden, precautions 103
housecleaning 140–142
tinkering 517–527
essential 522–524
care of 522–524
description 522–524
use 522–524
Tools—*Continued* PAGE
miscellaneous, use 527
supplementary 525–527
description 525–527
use 525–527
Towel bars, putting up. 556
Towels, paper 32
Toys, storage 55–56
Training household employees 114, 119–125, 127
Trays, sliding (kitchen cabinets) 24
Treated dusters, how to make . . 136
Trimmings, ironing 278
Trisodium phosphate (water-softening) 251
Tucks 278
Tufted rugs, how to make . . 342–344
Turkish towels, washing . . . 296–297
Turning rugs 175
Turpentine, for furniture . . 187, 188

U-shaped kitchen 18
Unfinished
furniture, painting 541–542
wood floors, care of 149
Uniforms
household employees . 116, 117, 126
starching 267
Upholstered furniture, care of . 190–193
moth-proofing 374–375
professional cleaning 192
shampooing 190–192
spots and stains 192–193
thorough cleaning 190

Vacation, household employees . 112
Vacuum
cleaner 131
care 132
use 131
coffee makers, electric . . . 391–392
Valence boards, care of . . . 171–172
Varnish
"checked" or crackled 189
furniture finish 184
method, finishing wood furniture 538–539
Varnished
floors, care of 147
wood panelling, care of . . . 166
woodwork, care of 167
Vegetables, storage 26
Veils, washing 294–295
Vellum lamp shades, care of. . 200
Velveteens, washing 288–289
Velvets, washing 288–289
Venetian blinds, care of 171
cord adjuster 536

Venetian blinds—*Continued* PAGE
repair of 536
slat mechanism 536
Ventilating fans
attic 440
kitchen 30, 440
Ventilation
clothes closets 64
kitchen 29
laundry 43
Vinegar cruets, care of 222
Viscose rayon 281
Voltage 471

Waffle bakers, electric, care of . 392–394
Wages, household employees . 110, 112
Wallpaper 160–164
non-washable 160–161
cleaning 160
spots and stains 160–161
crayon 161
food 161
grease 160
grime 161
ink 161
smudges 161
repairing damage
air bubbles 164
bulges 164
holes 163
open seams 163
tears
large 163
small 163
washable 162–163
cleaning 162
spots and stains 162–163
crayon 162
fruit 162
grease 162
ink 163
paint 163
water 163
washing 162
Walls 157–166
ceramic tile, care of 165
clothes closet 166
coated fabric, care of 164
washing 164
cobwebs, removing 157–158
composition tile, care of . . . 165
cork, care of 165
dusting 157
wallpaper 157
glass blocks, care of 165
gloss finish, care of 164
grass cloth, care of 164–165
gypsum wallboard 165

Walls—*Continued* PAGE
insulation board, care of . . . 166
kitchen 30
lacquer for wallpaper . . . 161–162
laundry 43
linoleum, care of 165
moulded plastic, care of . . . 165
painted 158–160
cleaning solutions 158
washing 158–160
method 159–160
whiting cleaner 158
plywood veneer, care of . . . 166
porcelain enamelled steel tile, care of 165
pressed wood, care of 165
radiator shields 158
structural glass, care of . . . 165
tempered plate glass, care of . 165
tile board, care of 165–166
waterproofing 575
wood panelling 166
polish for 166
shellacked, care of 166
varnished, care of 166
waxed, care of 166

Wash, furniture 187
Washbowl, care of 243–244
Washer
automatic 41
care of 271
space-saving 40
Washing
baby clothes 295
bedspreads 300
blankets 298–300
by hand 299
by machine 299
drying 299–300
general rules 298–299
bleaching 265
bluing 265
center, laundry 39
coated fabric walls 164
corduroy, washable 288–289
cottons and linens
colored 287–288
printed 287–288
white 261–271
curtains 301–302
cutlery 224
crib
pads 296
sheets 296
diapers 295–296
boiling 296
boric acid rinse 296

Washing—*Continued* PAGE
dish
cloths 225
towels 225
dishes 217–225
draperies 303–304
cotton 303–304
glazed chintz 304
linen 303–304
rayon 303
silk 303
drying
cotton and linens
colored 287
fugitive 287
white 269–270
rayons 283
silks 283
equipment 39
extracting water 268–269
spinning 268–269
wringing 268
foundation garments 292
fugitive colors 287–288
test for color fastness . . . 287
furniture
leather 193
painted 194
wood 187
gloves 293–294
fabric 294
leather 293–294
handerkerchiefs 297
lace 294
lingerie
rayon 292
silk 292
mattress pads 297
mending before laundering . . 261
mirrors 196
painted
furniture 194
walls 158
pillows 238
preliminary wash 262
"pretreat" 257
quilts 300
rayon 282–283
rugs, cotton 304
silk 282–283
silver 213–214
soaking
colored cottons and linens . . 262
time period 262
white cottons and linens . . 262
soda 257
sorting 261
slip covers 301

Washing—*Continued* PAGE
sprinkling 270
stain removal, before laundering 261
starching 265–268
stockings 292–293
suits, men's washable 290–292
Turkish towels 296–297
veils 294–295
velvet, washable 288
velveteen, washable 288
wallpaper, washable 162
windows 169–170
woolen garments 289–290
general rules 289
gloves 290
knitted garments 289–290
mittens 290
socks 290
stockings 290
sweaters 289–290
Water
bugs 357–359
for dishwashing 218
hard
effect on pipes 452
in laundering 256–258
heaters 445–448
as part of house-heating unit 445–446
instantaneous 446
storage 445
care of 448
circulators 448
cleaning 448
controls 447
mixing valves 447
relief valves 447
thermostats 447
separate 446–447
coal 446
electric 447
gas 447
oil 446–447
size 446
special 447–448
-marks, removing from furniture 187–188
-proofing
basements 574–575
chimneys 575
walls 575
pumping equipment 491–493
pumps 492–493
installation 492–493
types 490
deep well 492
jet 492
pressure 493

PAGE

Water—*Continued*
- shallow well 492
- selection 491
- site 491
- size 491–492

repellent fabrics, care of . . . 284
rusty 466–467
soft, effect on pipes 452
softeners 256–259
- borax 257
- commercial products . . . 257
- how to use in laundering . 258–259
- soap 257
- washing soda 257

softening systems 458–459
supply 489–494
- sources 491–492
  - cisterns 490
  - lakes 490
  - rain 490–491
  - springs 490
  - wells 490
- standards 489–490
  - distribution 489
  - production 489
  - quality 489-490
  - service 489
- treatment 493–494
  - chemical 494
  - disinfection 494
  - filters 493–494
  - softening systems 493

Watts 473
Wax
- applicators, use and care . . . 133
- floor, use 143–145
- furniture, use 186
- hard 186
- liquid 144
- paste 143
- removing from
  - floors 145
  - furniture 187
- self-polishing 144

Waxed
- floors, care of 144–145
- paper 52
- wood panelling, care of . . . 166
- woodwork, care of 167

Waxing
- floors 143–145
- furniture 186

Weatherstripping . 432–433, 554–555
- fuel-saving 432–433
- installation 554–555
- types 554–555

Weekly housecleaning 227–228
Weights of dry clothes . . . 270–271

PAGE

Whitewashed ceilings, care of . 166–167
Whiting cleaner for painted walls 158
Wick tubes, kerosene ranges, care of 251
Wicker furniture, painting . . . 543
Wickless kindlers, kerosene ranges, care of 251
Wicks, kerosene ranges, care of . 251
Window
- fittings, care of 170–172
- awnings 172
- screens
  - painting 552–553
  - repair of 551–552
  - washing 172
- shades 170–171
  - glazed chintz 170
  - non-washable 170
  - porch 171
    - bamboo 171
    - wood slat 171
  - repair of 535–536
    - springs
      - broken 536
      - stiff 535
      - unwound 535
  - washable 170
- valence or cornice boards . 171–172
- Venetian blinds 171
  - dusting 171
  - tapes 171
  - washing 171
  - waxing 171
- frames, care of 168
- sills, care of 168

Windows
- cleaning 169–170
  - liquid cleaners 169
    - commercial 169
    - home-made 169
  - paint or varnish spatters, removing 170
  - putty smears, removing . . 170
  - scouring powder 170
  - whiting 170
- repair of 532–535
  - cords 533–534
  - panes, resetting 534–535
  - rattling 533
  - sashes 533
    - painting 535
  - springs 534
  - sticking 533
    - hardened paint 533
    - stop or guide 533
- safety measures 96
- storm sash 433, 553–554

PAGE
Wine stains, removing 325
Wire, electric
runs 478–479
sizes 478
Wiring, electric 477–482
adequate, standards for . . 477–482
circuit breakers 480
circuits 477–478
convenience outlets 480–481
defective, safety hazard . . . 90
fuses 480
switches 482
Wood
boxes, care of 206
floors
care of 145–149
finishes for 146–149
unfinished, care of 149
furniture
care of 184–189
finishes for 184
repairs to . . 187–189, 543–546
-panelled
ceilings, care of 167
walls, care of 166
ranges, kitchen, care of . . 251–252
work surfaces, care of . . . 31
Wooden ware, care of 225
Woodwork, care of 167–168
painted 167
varnished 168
Woolen garments
pressing 279
washing 289–290
Work
bench 518
Work—*Continued* PAGE
centers
kitchen 15
laundry 39–40
Projects Administration, household employment . . 110–112
schedules 9–14
surfaces
care of—*see* Index for name of material
drainboards, area of . . . 27
materials 31
height, correct for comfort
ironing board 42
kitchen cabinet . . . 27
laundry trays 42
sewing tables 46–48
sink 27
Working
agreement, household employees 111–118
areas, kitchen 27–28
conditions, household employees 109–112
Wounds and cuts, avoiding . . . 102
Wringers
safety measures 102–103
use 268
Wrought iron, care of 211
furniture, care of 194

Young Women's Christian Association 114

Zinc, care of 216